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VOLXXIV. HANDBOOKS OF
PRACTICAL GARDENING

THE BOOK OF
THE
SCENTED GARDEN

BY

F. W. BURBIDGE

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HANDBOOKS OF PRACTICAL GARDENING—XXIV
EDITED BY HARRY ROBERTS

THE BOOK OF THE SCENTED GARDEN





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THE BOOK OF THE SCENTED GARDEN

BY

F. W. BURBIDGE

M.A., V.M.H., F.R.H.S. LONDON

CURATOR OF TRINITY COLLEGE BOTANICAL GARDENS, AND
COLLEGE PARK, DUBLIN

*"What cordials make this curious broth,
This broth of smells, that feeds and fats my minde."*

—GEO. HERBERT, "The Odour."

*"Know you, Faire, on what you look;
Devinest love lies in this book, . . .
Of your well perfumed prayers . . .
That while I lay them on the shrine
Of your white hand they still are mine."*

—CRASHAW, 1646.

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PREFACE

"The outside of the vase is scrawled over with odd shapes, and writing, but within are precious liquors, healing medicines, and far-gathered herbs and flowers."—Plato.

THIS little book about the Scented Garden and its contents, or potentialities, has grown up out of the original notes and quotations prepared for a paper on "Fragrant Leaves v. Sweet-Scented Flowers," read before the Council and Fellows of the Royal Horticultural Society, in April 1898, at the Drill Hall, Westminster. The paper itself was published in the *Journal of the Society*, vol. xxii. part ii. pp. 134-75. In thanking the Council and Secretary for their kind permission to make that paper the backbone, as it were, of this book, I should like to say that I owe a good deal of my professional education to the Royal Horticultural Society and its garden at Chiswick, having been a student there before I was so fortunate as to be employed mainly as a gardener, but occasionally as a botanical draughtsman and copyist, at Kew. To these two institutions, it may be said, we really owe the pre-eminence in botany and in horticulture that we enjoy as a nation to-day. While Kew has up to a recent date mainly helped the Colonies and India, both by the introduction of suitable economic plants, and the training of young gardeners and others to cultivate them, we may fairly claim that the Royal Horticultural Society, unaided by either funds or patronage from the government, has ever done its best for our home fields and gardens. It is indeed a moot question whether, "Imperial Kew by Thames' glittering side," as kept up by State expenditure, or the

Royal Horticultural Society, dependent alone on subscriptions and donations from its Fellows, has done most good to us as a nation of practical horticulturists. It really does not much matter in any case, but some of us think that the Royal Horticultural Society should have been included with Kew when the latter was placed under the Agricultural Department a year or two ago. There are many difficulties in the way of a government subsidising a society of private subscribers, and perhaps it is best for things to remain as they are; but as "charity begins at home," it will please many to know that Kew, under the Board of Agriculture, will be a reference department of the utmost value to market-gardeners and farmers in Great Britain, just as it has been to the Colonies and India for many years past. I hold no brief for the Royal Horticultural Society, but it deserves the support of all interested in the finer or higher branches of earth culture, *i.e.* the economic cultivation of flowers, fruits, and vegetables on our native soil. Its recent progress has been extraordinary, and new Fellows or subscribers are at present flocking in at the average of over one thousand persons per year. A new Hall of Horticulture has been in course of erection for a year or more in Vincent Square, S.W. Its garden at Chiswick, —or the twelve acres or so left out of the original thirty-three—is now about to be given up; but in place of it, Sir Thomas Hanbury's gift of the late Mr G. F. Wilson's sixty-acre garden and lands at Wisley Wood near Weybridge will probably make ample compensation. Wisley is now isolated, and more difficult of access than was "dear old Chiswick"; but things may change, and Wisley become a busy focus spot, or centre, not alone for scientific horticulture, but for schools or colleges of fruit-growing, market-gardening, scent farms, and perhaps of elementary forestry as well. In any case no one fond of gardening could invest a guinea or two a year

more profitably than by becoming a member of this Society. The fortnightly meetings at Westminster, the rose-show at Holland House, the great flower-show of the year in May, in the Inner Temple gardens, the Journal published quarterly, and the new gardens at Wisley, will assuredly yield them both pleasure and profit, and in patronising the Society they will enable it to become ever more and more productive of good to all concerned.

An interesting paper was read on December 15th 1903 at the monthly dinner of the Horticultural Club, by Messrs Bunyard and O'Brien, on "Scented Inconspicuous Flowers." A good deal was said as to the night blooming and obscure flowers being perfumed and mostly white or pale yellow, so as to attract insect visitors necessary to their perfect fertilisation. Of course there are many cases of very large and showy flowers being perfumed also. Insects, birds, and other creatures again were thought to have sight, hearing, and smelling power far in excess of our own. Some insects, especially the Lepidoptera, are attracted towards each other over long distances at certain seasons probably by sound or odour. The alliaceous smell of onions again is reproduced by *Helix alliaria*, a small snail, as also by the vapour of arsenic. Some perfumes we think attractive, such as camphor and lavender, are strongly repellent to some insects, while on the other hand odours of some Cape Stapelias, or "carrion flowers," and arums, or orchids, most repulsive to ourselves, are strongly attractive to carrion flies, beetles, or slugs, etc. The permanent nature of some animal perfumes, musk, civet, ambergris, etc., were alluded to, the subtle emanations of which go on for years. Those present did not appear to have heard of Edison's discovery years ago, of the sensitive odoroscope, an instrument that can detect and measure odours imperceptible to the ordinary senses. Its action seems

to show that there is a subtle connection between odour waves and moisture in the atmosphere.

The subject of fragrant leafage, and of honey or perfume-yielding flowers and leaves, is becoming of more and more importance every day. Despite the cultures of savoury herbs, and the distillation of peppermint, lavender, roses, and other flowers at Carshalton, Mitcham, and Wallington in Surrey, or at Hitchin and other places in Herts and Beds, there is ample room for a much extended acreage of herbs for medicine or cookery or for the making of perfumes, so many of which are now imported from abroad. Enormous sums are spent every year upon imported flowers or roots, such as violets and lily of the valley, that might easily be grown in this country. Any legislation as to imports that will protect our home-grown food, products, and garden flowers, will be a great help to horticulture and agriculture as well.

One of life's great difficulties, nowadays, is to obtain pure and natural food and drink of every kind, and nature's perfumes and savoury spices are of course the best for us in every way.

The old days of thrift and domestic economy, when everything was "home made," have gone, and nowadays most things edible or potable are made as cheaply as possible in large quantities to sell. Unfortunately for the consumer, both taste and flavours or aroma, as well as smell or odour, are easily imitated by the manufacturing chemist, and he like all experts must work for a dishonest manufacturer if he cannot obtain employment from an honest one. What the analyst can do on one hand the synthetic chemist can do on the other, and laws relating to food and drink are evaded, and very often with impunity. Even in cases where adulterants are not used, food products are lowered, coloured, and flavoured with success so far as the deception of pur-

chasers is concerned. The use of so-called "preservatives," such as salicylic acid, etc., are not only hurtful to digestion in themselves, but they enable bad food to be eaten, and so do a double injury. Glucose and colouring matter in cheap jams, water in milk, foreign fats in butter, sugar and arsenic in ale or beer, are only a few of the pitfalls laid for us in the marketplace every day of our lives. This is merely one way of emphasising the fact that all our senses, however cultivated and acute they may be, are open to deception. Even "the pure air of heaven" becomes vitiated in towns, and there are so-called improved kinds of sanitation that lead to infection. The little London school boy when asked what a fog was, replied that he didn't quite know, but he thought it was "a mist that couldn't fly away!" Our London fogs now reach into the suburbs and beyond for miles, and do incalculable injury to vegetation outside, as well as to flowers or other market-garden products under glass roofs. We must all do our best to encourage Sir O. Lodge in his attempts to banish fogs or mists by electrical discharges. Any one who can do away with the enormous waste and countless other evils of coal smoke and fog, will revolutionise existence in large towns, and save the enormous losses now suffered by market-gardeners and florists, especially near London. From Evelyn's time in 1661 until to-day, the fog problem has defied chemists, physicists, and all other scientific men, and even modern London and County Councillors and others seem as far off its solution as ever.

F. W. B.

CONTENTS

	PAGE
PREFACE	vii-xi
INTRODUCTION	I
FRAGRANT LEAVES <i>v.</i> SWEET-SCENTED FLOWERS	4, 32
OLD RUSTIC CUSTOMS	7
THE FIVE SENSES	7
ESSENTIAL OILS, <i>v.</i> BACTERIA	11
,, ,, AS GERMICIDES	11
,, ,, AS ANTISEPTICS	12
CHEMICAL PERFUMES	12
MARKET VALUE OF SWEET FOLIAGE	13
THE GREEN LEAF	15
GARDENS ENCLOSED	17
THE SMELL OF THE TOWN	22
INSECTS AND BACTERIA	23
ESSENTIAL OIL IN FODDER CROPS	23
STINKS, OR FIGHTING THROUGH THE NOSE	24
INTERCONNECTION OF THE SENSES	25
WHAT IS ODOUR OR PERFUME	27
ODOUR AND IMAGINATION	27
INTERESTING TO SINGERS	29
PERFUMES, HEALTHY OR INJURIOUS	33
,, MIXED	34
EDUCATED NOSES	35
MAKING TEA SCIENTIFICALLY	36
COLOUR AND SCENT EXPERTS	37
SCIENTIFIC NEGLECT OF ODOUR	38
FLORAL ODOURS, EVANESCENT	39
LEAF ODOURS, PERMANENT	39

	PAGE
FLORAL AND LEAF ODOURS ANTISEPTIC	40
PERFUMES AND TEMPERATURE	41
,, FOR BURNING	42
SPICE ISLANDS OF EUROPE	43
POT POURRI, VARIOUS	45
A SWEET JAR	49
SMEE'S PLAN OF CONDENSING ODOURS	49
SUNSHINE AND PERFUME	51
TO DRIVE AWAY MOTHS	33, 52
A B C LIST OF PERFUME PLANTS, ETC.	53
BOOKS AND NOTES ON PERFUMES	77
CHEMISTRY OF ODOURS	88
LIST OF SWEET-LEAVED PLANTS	90
INDEX	92

ILLUSTRATIONS

GENISTA	<i>Frontispiece</i>
(<i>From a drawing by Ethel Roskruge</i>)	
FREESIA REFRACTA ALBA	<i>To face page 10</i>
(<i>Photo by J. E. Tyler</i>)	
WISTARIA OVER A GATEWAY	,, 20
(<i>Photo by Mrs T. H. Barnard</i>)	
MAGNOLIA HALLEANA	,, 30
(<i>Photo by J. E. Tyler</i>)	
HERBACEOUS PHLOX	,, 40
(<i>Photo by J. E. Tyler</i>)	
DATURA	,, 50
(<i>Photo by Mrs I. L. Richmond</i>)	
A ROSE-COVERED COTTAGE IN SOMERSET	,, 60
(<i>Photo by John Scott</i>)	
A SPRING BORDER	,, 70
(<i>Photo by Miss Slacke</i>)	
DAY LILIES	,, 80
(<i>From a drawing by Ethel Roskruge</i>)	



INTRODUCTION

“Who hath the vertue to express the rare

And curious vertues both of herbs and stones?”—*George Herbert.*

Two centuries or more ago Gonzales Coques, a Fleming, painted his beautiful little pictures, now well known in the National Gallery, London, under the name of “The Five Senses”—*Taste, Touch or Feeling, Smell or Fragrance, Hearing, and Seeing.* Of all the five senses that of smell, or the sense of odours, is the most subtle and difficult to define, as it is also of all the senses the one least amenable to our control. We may avoid seeing, or tasting, or touching, but, alas! we cannot preserve our ears or our noses from the subtle influences of their surroundings. Again, the sense of smell is far more subtle than the sense of hearing. Sounds may be analysed and set down by notation, as in music, but who shall analyse and give to us a chromatic scale, so to speak, of the thousand and one whiffs of fragrance, or the myriads of odour waves that bombard the nose? The sight of a faded bit of some dear one’s writing—the faintest melody of a well-remembered tune—the flavour of some particular fruit or wine—the touch of a loved one’s hand or hair, arouse in us all many feelings and varied memories, but not one or any two or more of the senses can do this more potently than does the subtle fragrance of a room, a drawer, or the dainty kerchief, or even an old glove, a few withered rose-leaves, or faded violets; a scented geranium leaf in an old letter even is enough to call up the most vivid memories from the vasty deep of a half-buried past.

2 BOOK OF THE SCENTED GARDEN

I have said enough to show that we need not necessarily go to the flowers or blossoms alone for the sweet odours that bring fragrance and health in their train. The fragrance of leaves, as of flowers, is mainly due to the presence and secretion of essential and often volatile oils of various kinds. Such common examples as Rue, Rosemary, Lavender, Ladslove, Wormwood, Eucalyptus, Myrtle, Sweet Bay Laurel, Diosma, Scented Pelargonium, Allspice, Cinnamon, Patchouli, Orange and Lemon leaves, Thyme, Balm, Mint, Sage, and Marjoram, are all pretty well known, but in the world's great wild garden the variety is enormous, and the economic importance of the essential oils secreted by green leaves has as yet not been told. Next to the dynamics of plant growth, there is no unworked field of original research so attractive and that promises to be so productive as does this question of odorous leaves.

Apart from the chemist and the physiologist, even the physicist may learn much from the odorous leafage of the desert and the prairie. It is not for nothing that some leaves are filled with oil cells while others do not produce them, for we now know that nothing, however seemingly trifling, nothing is useless, nothing is created in vain. Even in prosaic practical matters, scents and flavours have to be dealt with by the doctor and the cook, and our food as well as our medicines would not please us so well, were it not for the subtle scents and delicate flavours we can impart to them by the aid and ministration of "nothing but leaves." "Nothing but leaves" indeed, when without green leaves our life here would be impossible.

The green leaf is the greatest and most perfect of all chemists. It can take up or absorb earth-salts in water, and carbonic dioxide in air, and form starch or sugar interchangeably. Our wisest chemists of to-day can form sugar out of starch, but no chemist (except a green

leaf in sunlight) can turn sugar into starch again. As the biologist searches and gropes for a glimpse at the origin of life, so the modern chemist is struggling to find some method of transforming sugar into starch *without* the agency of *the green leaf*; and the discovery will be made, difficult or impossible as it may now seem, and then it will revolutionise our modern food industries, and cause the arid deserts to be as fertile or productive as our richest meads and our best tilled farms.

FRAGRANT LEAVES v. SWEET-SCENTED FLOWERS

“Farewell, dear flowers; sweetly your time ye spent,
Fit while ye lived for smell or ornament,
And after death for cures.”—*George Herbert, “Life.”*

INTRODUCTION

LIKE most other natural things, the early history of perfumes, or odours, is deep down buried in the ages of the past. Still we have good and reliable evidence to show that they were used by the earliest of civilised people on this earth, and we may believe that they were employed long before people were very highly civilised, since we find them used by savage tribes at the present day. History tells us that the Assyrians, Chaldeans, and Phœnicians, the Hebrews and Egyptians, the Greeks and the Romans, the Gauls and the Celts, and the Saxons all used sweet odours in some shape or form. By the same token we know that perfumes were used by the sturdy Normans and the crafty Moors: all had and used choice and rare perfumes on which they set great store. The same is especially true of the early peoples eastward, as well as westward. Perfumes and savoury odours were used by Hindu and by Aztec alike; and if a full and true account of perfumes could be written to-day, I think we should be a little astonished at the great, and even tragic, parts they have played at times in the history of the human race. In Shakespeare's time old English gardens were rich in fragrant and aromatic herbs, many of which were highly valued in

rural medicine. The growing and culling of herbs and simples, and their distillation, or formation into cordials and potions, was carried on by wise and practical housewives and shrewd old village dames. Pomanders were made and given as New Year gifts; it was the day of sweet bagges and sweet waters, the materials for which came mainly from the garden or the field. Botany and medicine and chemistry were alike in their swaddling clothes. It was in the days of perfumed bed-sheets, gloves, and shoes, etc.; of the "nosegay" and the "posy" rather than of the "bouquet."

Sweet odours and savours always held a place in nearly all religions, in all lands; and we have our incense of to-day. In Elizabeth's time, and long before, houses and churches and even theatres were sweetened or purified by the burning of dried, or the strewing of freshly gathered herbs. English literature, from Lord Bacon to Lord Beaconsfield, from Gower and Spenser and Shakespeare to the days of Tennyson, is redolent of all the sweetest leaves and flowers of English gardens.

In Mexico and Peru the choicest of flowers were laid before the images in the temples, especially on great occasions, and it was forbidden under severe penalties for any one to smell them and so take away the very spirit of the offerings. Even to-day in South America the finest of Orchids are often planted on the roofs of the churches.

From China and India to Peru and Brazil the learned have ever set a high value on perfumed things—from Buddha to Mahomet, and even later still. The cultured Brahmins have for ages hoped for and looked for the advent of a blue-flowered Champaca (*Mitchelia champaca*), just as our English gardeners have ever longed for a Blue Rose.

6 BOOK OF THE SCENTED GARDEN

FRAGRANT GARDEN FLOWERS

“Of their sweet deaths, are sweeter odours made.”

“The garden borders bear for us odours as precious as any breath of tropic Orchid: from the Lily of the Valley to the Carnation—this last being perhaps the most grateful odour of all the flowering host in our garden land. Among these borders one meets with things sweeter than words may tell of—Woodruff, Balm, Pinks, Violets, garden Primroses, Polyanthus, day and other Lilies, early Iris, Narcissus, evening Primroses, Mezereon Bush, Wallflower, and Pansies, delicate in their sweetness. . . . Even our ugly walls may be sweet gardens with Magnolia, Honeysuckle, Clematis, Sweet Verbena, and the delightful old Jasmine, still clothing many a house in London. Most precious of all, however, are the noble climbing Tea Roses raised in our own time, mostly in France within the past forty years or so. Among the abortions of this century these are a real gain—the loveliest flowers ever raised by man. Noble in form and colour, and scented as delicately as a June morn in alpine pastures, with these most precious of garden Roses we could cover all the ugly walls in England and Ireland, and Heaven knows there are many in want of a veil.”—*From Introduction to “Sweet Scented Flowers and Fragrant Leaves,” by Donald M'Donald, pp. xiii. and xiv.*

“Through the open windows also, at almost any time of the year, pours the delicious scent of leaf and flower—of Winter Sweet, Violets, or Sweet Peas; of Stocks, or Mignonette; of Wallflowers, or Roses. Just to name a few of the plants whose scent fills the rooms, what glories are thereby called up—Honeysuckle and Jasmine, Lily of the Valley, Lilac and Narcissus, Carnation, Syringa and Heliotrope, Thyme, Bergamot, and Aloysia! These, and a hundred other fragrances mingled together in

infinitely varying combinations, give sensuous joys which even the most jaded can but appreciate. For there is probably no pleasure so democratic as that which is yielded by the fragrance of flowers and leaves. The colour and form of plants require a little attention for their appreciation, but their odour overwhelms our senses whether we attend or no. The variety of perfumes yielded by plants is almost as great as their forms, for blossom of Apple and of Jonquil, leaf of Strawberry, Currant, and Sweet Gale gives each an æsthetic pleasure peculiar to itself."—*From A Garden by the Sea, in "The Book of Old-Fashioned Flowers,"* p. 17.

OLD RUSTIC CUSTOMS

Old men have told me of the days when women placed sprigs of Costmary, Ladslove, Rosemary, and Lavender, with perhaps a flower or two, in their bosoms when they went to church in the stifling hot summer days, and the memory of such customs calls up a picture drawn in poesy by Ovid,¹ when he says: "Her hair is smoothed with a comb: now she decks herself with Rosemary, again with Violets or Roses, sometimes wears white Lilies, washes twice a day her face in springs that trickle from the top of the Pegasean wood; and twice she dips her body in the stream."

THE FIVE SENSES

"Of all smells, bread; of all tastes, salt."—*George Herbert.*

Let us devote just a minute to the gateway arch of all human knowledge—the five primary senses.

(1) We begin with *touch* or feeling because that is the mother sense, as it were, of all the others. To the young of all animals touch means warmth and food. You may

¹ Ovid, *Met.* xii. 409-15. B.C. 43-A.D. 18.

have noticed the milky eyes of a new-born baby staring at nothing; but if it grasps you with its tiny hand you will have some notion of its great strength of grasp out of all seeming proportion to its age and size.

(2) *Taste* runs touch very closely, and is perhaps really compounded of touch and smell, because if you close your eyes and nostrils firmly, so as not to see, or get any flavour or aroma of what you are eating or drinking, you cannot really tell what your food or drink may happen to be. I remember learning this fact very early in life. My grandmother always thought my mother quite incapable of managing her own baby, and having an extensive knowledge of rural medicine she used to practise upon me to her dear old heart's content. Most herbal remedies I could drink off without faltering, but I drew the line at castor oil. Hence the old dame used to hold my nose tightly whilst she poured it down my throat.

Taste is a sensation located in the tongue, the sensory area concerned being the glosso-pharyngeal, and certain branches of the fifth nerve. Although taste depends largely on smell, there are at least four primary tastes, viz.: Sweets or sugary, bitters, like olives or gentian, acids as in many fruits, vinegar, etc., and salines such as sea-water or salt. These four sensations or tastes are quite distinct from olfactory sensations.

(3) *Smell* I place third on the list because it often seems to come before sight in animal evolution. Puppy dogs find their mother by touch or scent long before they can see, as is well known. Of all the senses it is, as far as animals are concerned, one of the very first importance. In the tropics, monkeys and bats alike hunt by scent rather than by sight. This is especially true of the fruit-eating animals and birds. Vultures, condors, and other carrion-eating birds, and some fishes, sharks, etc., by scent detect their food at distances that would seem incredible did not travellers agree in their testimony.

With insects generally the sense of smell is extremely acute, as all entomologists agree in telling us ; and although Sir John Lubbock's well-known experiments proved beyond question that insects see colours, and prefer blue to red, and red to yellow, yet it remains true that insects rely mainly on odour in their search for food or for each other. The sense of smell is perhaps of all our senses that least under our own control. It is of all other senses the most subtle, and most difficult to regulate, or measure (see p. 10), or define. We may to some extent actually avoid touching, seeing, or tasting, but, alas ! our ears and our noses cannot often be preserved from the disagreeable sounds or odours that surround us. All the senses are mnemonic, but none are so potent in recalling persons, scenes, or places as is the sense of smell. Sound may be analysed and set down as in music ; colour is simplified and can be arranged in methodical form ; but, despite the crude attempt of the late Dr S. Piesse in his " Art of Perfumery," it yet remains for some specialist in odours to give us a gamut or scale, so to speak, of the thousand and one subtle whiffs of fragrance, or the myriads of odour waves that so often bombard the delicate nerve centres that lie under the mucous membrane inside our noses. Children are often taught that it is rude to smell their food before eating it, and yet there are times when the primitive nose test might save them and ourselves from many dietetic troubles. Experts in selecting the best solid and liquid food products, use their noses as well as their eyes with the best results, and the subtle art of smell and power of diagnosing things by nose power is well worth developing to its fullest extent.

(4) *Sight*.—It is a sad thing to lose one's sight, and yet the blind have many compensations ; and it is a well-known fact that, other things being equal, the

senses of touch and of hearing and of smelling, and consequently of tasting, are very much improved.

One object I had more especially in view in preparing this paper was to advocate the growth of sweet-scented flowers, and especially sweet-scented hardy flowers and foliage, in or around all of our institutions for the blind. This is no new gospel, since the late Miss Frances J. Hope, of Edinburgh, inaugurated the giving of sweet-smelling leaves and flowers to the blind of her native city long before even ordinary Flower Missions were begun and carried out elsewhere. She used to say, "Give what flowers and leaves you like to your sharp-eyed friends, or the poor who can see; but it is almost an insult to offer a blind pauper a gaudy flower without a perfume." Miss Hope was one of the first to observe and record the fact that blind people almost invariably touch or feel the flowers before they sniff at them. Miss Hope was a woman of intellect and mettle, and one can fancy or imagine her indignation when some candid friend suggested that "a bottle of perfume would go further, and last longer among her blind friends, and so save her from 'wasting flowers on the blind,' " and thus enable her to keep the flowers for the seeing sick and poor!

(5) *Hearing or Sound*.—On our power of hearing depends all enjoyment of music, bird song, and other sweet sounds. Even speech itself, that master-key of the human race, depends to a great extent on our power of hearing, though speech may be seen by the deaf just as writing is felt by the blind. Of hearing, however, we need say no more, since it has practically nothing to do with our present subject.

Aids to the senses have improved—much more so than have the senses themselves. Edison's micro-tasimeter detects the difference of heat to the 1,000,000th part of a degree, his hygrometer shows the faintest trace of



FREESIA REFRACTA ALBA

moisture, while most wonderful of all perhaps, the odorometer detects and measures gases or odours ranging from the most pungent to the most delicate.—“*Life and Inventions of Edison*,” p. 81.

ESSENTIAL OILS *VERSUS* BACTERIA

Those who wish to go further afield in their inquiries as to the beneficial influence of essential oils *versus* bacteria should consult Sternberg's “Text-book of Bacteriology,” p. 199 *et seq.* Professor Chamberlain has made extensive experiments in order to prove the antiseptic powers of the vapours of volatile vegetable oils. A large number of the essential oils tested did actually prevent the development of the anthrax bacillus; while, on the other hand, a few of them did not do so. At the end of six days the culture tubes containing the bacillus and the oil were opened, and the oil which had been absorbed by the culture liquid allowed to evaporate. Living cultures were again obtained from all except the following, which it was inferred had destroyed the vitality of the bacillus and its spores or divisions. The essential oils that did this were Angelica, Cinnamon of China, Cinnamon of Ceylon, Geranium of France, Geranium of Algeria, and Origanum. In the case of the typhoid bacillus the essences which killed its germs after a contact of less than twenty-four hours were as follows:—

GERMICIDAL POWER OF ESSENTIAL OILS

Cinnamon of Ceylon, at the end of 12 minutes.

Cloves,	“	“	“	25	“
Engenol,	“	“	“	30	“
Thyme,	“	“	“	35	“
Thyme, Wild,	“	“	“	45	“
Verbena of India,	“	“	“	45	“

12 BOOK OF THE SCENTED GARDEN

Geranium of France, at the end of 50 minutes.

Origanum,	„	„	„	75	„
Patchouli,	„	„	„	80	„
Zeodary,	„	„	„	2	hours.
Absinthe,	„	„	„	4	„
Sandal-wood,	„	„	„	12	„

ESSENTIAL OILS AS ANTISEPTICS

Professor Riedlin reports, as to the results of his experiments, that the essential oils which have the greatest antiseptic value are “oil of Lavender, Eucalyptus, Rosemary, and Cloves. As to Eucalyptol its efficiency as an antiseptic has been popularly much over-rated.” Thus Chabannes and Perret found a 5 per cent. solution had no effect whatever on tubercle bacilli in sputum; and, according to Behring, Eucalyptol is about four times less active as a disinfectant than is carbolic acid.

ARTIFICIAL OR CHEMICAL PERFUMES

Apart from animal perfumes such as musk, civet, castor, and ambergris, and the vegetable odours derived from flowers, leaves, roots, fruits, or seeds, there are a few purely chemical perfumes, such as nitrobenzol, attar of mirbane (or false almond), vanillin (or methyl-protocatechnic aldehyde), coumarin (or coumaric anhydride), and a few others, such as “hemerocalle,” “bromelia,” “aubepin,” etc., not as yet much used or sold. Tielman and Hermann, in Germany, first made “vanillin” from pine-tree sawdust; and Dr C. R. Alder Wright afterwards made it from crude opium. The chemical “vanillin” is forty times stronger than the natural product, and is worth about 23s. per oz. Coumarin (Tonquin-bean odour) is also now made chemically, and costs about 9s. per oz.

MARKET VALUE OF SWEET FOLIAGE

“The market is the best garden.”—*George Herbert in “Jaculum Prudentum.”*

To come to trade matters, I believe a good business could be done in hardy, fragrant, and durable foliage as opposed to flowers. I am told that there is always a good demand for all kinds of sweet pot herbs in our great city markets, either fresh or as dried; and I can well believe the statement that the supply of good foliage or greenery falls short of the demand, although there are generally plenty of flowers. The cook, the doctor and druggist, and the makers of wines, liqueurs, and cordials, and floral decorators owe much, and might owe much more, to fragrant foliage and to agreeably flavoured herbs. In Elizabeth's days the “herb woman” was a necessary addition to the servants of the fine old country houses, and there is some reminiscence of her and her duties lingering around the English Court to-day.

I believe all pleasant odours are harmless, and very often they are actually beneficial. On the other hand, whilst many disagreeable odours may be harmless, but few of them do us any good, and some of them carry the germs of dire disease, and often prove a scourge to the human race. Beau Brummell used to insist that no man of fashion in his day should use perfumes, but that he should send his linen to be washed and dried on Hampstead Heath.

“For of all things, there is none so sweet as sweet air—one great flower it is drawn round about, over and enclosing like Aphrodite's arms: as if the dome of the sky were a bell flower dropping down over us, and the magic essence of it filling all the room of the earth. Sweetest of all things is wild-flower air.” So we see that even Jefferies had been anticipated, as to the

14 BOOK OF THE SCENTED GARDEN

healthfulness of pure fresh air and sunlight near London in the days of the dandies.

FLOWER OR SCENT FARMS

There are scent-producing flower-farms in several of our British colonies in South Africa, and in Australia ; and Colonel Talbot has obtained some success in Jamaica. The finest Peppermint, Lavender, and Thyme, etc., has for many years been grown at Mitcham in Surrey, and there is plenty of land suitable for this industry in Kent, Surrey, and elsewhere in the South of England.

SCENT GARDENS IN LIGURIA

The great European flower-farms for perfumery uses are, however, in the valley of the Var, a great triangular space of 115,000 acres, with Grasse at its apex and Nice and Cannes at each corner of its base on the Mediterranean. The flower, leaf, and fruit-rind harvest on this tract is a very large one, and the various odours are roughly prepared on the spot by maceration, distillation, enfleurage, or simply by expression, according to kinds and quality required.

STATISTICS OF FLOWER CULTURE IN THE VALLEY OF THE VAR.

Flowers, etc.	Weight in Tons.	Harvest Time.
Orange flowers . . .	1,800	20th April to 31st May.
Roses	930	15th Jan. to 15th April.
Violets	147	20th July to 10th October.
Jasmine	147	Aug., Sept., and Oct.
Tuberose	74	" " "
Cassia	30	Oct., Nov., and Dec.
Jonquil	15	February and March.

BEAUTIFUL FLOWERS WITHOUT SENTIMENT

When we go to visit the royal and noble gardens in England, what do we often find there? You will find

the most exquisite of tropical Orchids and other exotics in damp, warm greenhouses. You will be satiated with exquisite flower, form and colour, and perfume. For, after all (and I hope the Orchid growers will forgive me, for I am an old Orchid collector and grower and lover myself), Orchids are, in a sense, what dear old Parkinson called "outlandish flowers"—flowers having, like Albert Smith's coryphées, "exquisite bodies but no souls." No sentiment lingers around them, no sweet old-fashioned legend or tradition; their perfume even is borrowed, as it were, and not their very own; and we may be said to admire them rather than to love them, and when satiated with their beauty we turn to the dear old Cloves, Carnations, Pinks, Roses, Violets, Musk, and scented-leaved Geraniums (Pelargoniums) of our grandmothers' gardens—things primæval, as it were, that peer and peasant, rich and poor alike, can grow and admire. Artemus Ward used to say that modern English authors would have had a good opening if the early poets and Shakespeare had not said all the good things before their time; so that we must not blame the Orchids too much, since botanists and geologists agree in telling us that they are the most modern of all flowers—Nature's last bit of floral patchwork or mosaic—formed of the shreds and patches of older things.

THE GREEN LEAF AS A CHEMICAL LABORATORY

Let us now ask ourselves what the odour-distilling green leaf as a chemist does for us. Well, it works whilst we are resting, as well as when we are awake. "Be aye stickin' in a tree, Jock: it'll grow while ye're sleepin'," is a well-worn Scotch proverb. But the green leaf does more than the chemist can do in his finest of laboratories. It can turn sugar into starch (as well as starch into sugar); it can bring forth life out of dead

matter; and these are things no chemist as yet can do. When we ask ourselves what the green leaf does for us, the answer would seem miraculous had we not got used to accepting its products as a mere matter of course—timber for the builder's yard, corn for the granary, flowers and sweet leafage for the bride's chamber, moss for the grave. The green leaves feed the cattle, the flocks and herds on a thousand hills. They give corn and wine and oil to the teeming millions of our little sphere. Every green leaf is a chemical laboratory, acting like a dynamo under the power of sunshine and fresh air; a still-room in miniature distilling for our needs the most potent of health-and-strength-yielding products.

It seems a hard saying, perhaps, but it is quite true, that the aroma and flavour of our food, our wine, the very "milk and honey" of our lives, is primarily dependent on "nothing but leaves." Perfumes of flowers and leaves enter into all our relations with life and love and death. Nero burnt more than a whole year's produce of spices and perfumes from Arabia on the pyre of his favourite wife and empress Poppæa.

Sweet leaves are like our five senses, potential for good, and like them rich in promise, for to green leaves alone is due every good gift that we value and enjoy from the vegetable world.

The moral is, let us, then, grow in our greenhouses and gardens all the fragrant herbs we can. Here is a taste—a fashion if you will—that has come down to us from the foundations of human history; not a fashion like that of bicycles or bonnets, but a precious possession for all time. From the day when the great Creator gave food for the cattle and "herb for the service of man" the perfume-distilling leaves have been with us as they will be with us in joy and in sorrow, in life, in love, and in death, to the end of time.

GARDENS ENCLOSED, AND GARDEN HOUSES

“The charges of building and making of gardens are unknown.”

—George Herbert, “*Jaculum Prudentum*.”

OF course, all garths and gardens are enclosed, that is to say, fenced and more or less sheltered, but our “garden enclosed” is meant to be a garden within a garden, a sort of “holy of holies,” being at one and the same time a wind-sheltered sun-trap and a site for a garden-house sacred as it were for one’s own children and to our most intimate of friends. As to the garden itself, its size and form may be anything provided that it is in keeping, or due proportion to its surroundings. In this particular instance it is to be a garden of sweet-scented plants and flowers, “a garden of spices.” There must be grateful perfume as well as graceful form, and the glow of colour all over the place. As at least one room in a house may be sacred to quiet study, and literary or other art-work, so also may the enclosed garden, or one of them in large and extensive places, be devoted to similar seclusion, especially during fine weather, while also possessing the added delights of fresh air and sunshine, the presence of the birds, the butterflies, and the flowers. To the artist a studio in a garden is in many cases an inspiration also, even though one in the woods, as at Fontainebleau, at Epping, or Burnham might appeal quite as strongly to others. Men of letters and poetry like Tennyson, Turner, and Ruskin, C. Kingsley, and many others, may have done their actual writing or large pictures indoors, but the

real work, the observation, and the golden thoughts were from the heath and meadow, the sea, or the mountain-sides—born of the sunshine or the storm, ripened as it were in the pure fresh air. We have only to read works like those of Shakespeare, or to look at Turner's original water-colours in the National Gallery, to see the force and beauty of open-air work, as compared with that of the library or the studio indoors.

A book written indoors smells of the oil of midnight, and the phrase "a studio picture" very often means pretty much the same thing.

Cowper was not quite a Wordsworth, Longfellow, or a Tennyson, still we are told that his "idyllic sketches of indoor and outdoor life were conjured up in a summer-house not bigger than a sedan-chair, standing in a garden rich with Roses, Honeysuckle, Pinks and other sweet-smelling, old-fashioned flowers."

The fact is that the garden is nearer to nature than anywhere indoors, no matter how large and glorious a house may be; and if the garden gives us privacy and repose, "things pleasant to the eye and good for food," so much the better. We all must know many people who naturally grow more genial and expressive in their gardens than elsewhere.

Sadi said long ago, "The Rose garden is no place for grief," and the same ought to be true of the sweet-scented garden, especially if there is a light and cosy studio in it, a place for labour and comfort, rather than a place for ostentation and mere show. I can recall many happy hours spent in such places sacred to books and pictures and to flowers. Such places are to be found from Land's End to Orkney, and wherever seclusion is essential to study and work there is nothing so satisfactory as "a small house in a large garden."

Besides all this there is always tugging at our heart-strings the Adamite craving to be out of doors during

fine weather. To the artist and gardener, as well as to the farmer and the sportsman, this primitive desire recurs more or less at all seasons ; it is, in one or other of its phases, common to all healthy people, and I at least believe that the inception of all the best human work comes more freely to those who are commonly called "open air" people. Unfortunately our British climate does not often, much less always lend itself to a life in the open air, as does that of the south and south-eastern Europe, hence even in our gardens arises the necessity for shelter, and the garden house in one form or another deserves, because it actually demands attention. In modern times the conservatory near the house, or the more or less remote greenhouses, have served as temporary shelters, and so to some extent the old summer-houses, arched alcoves, or cloisters of masonry or of box and yew, have vanished as encumbrances, and a good deal of picturesque ingenuity and quaintness in gardens has consequently been lost.

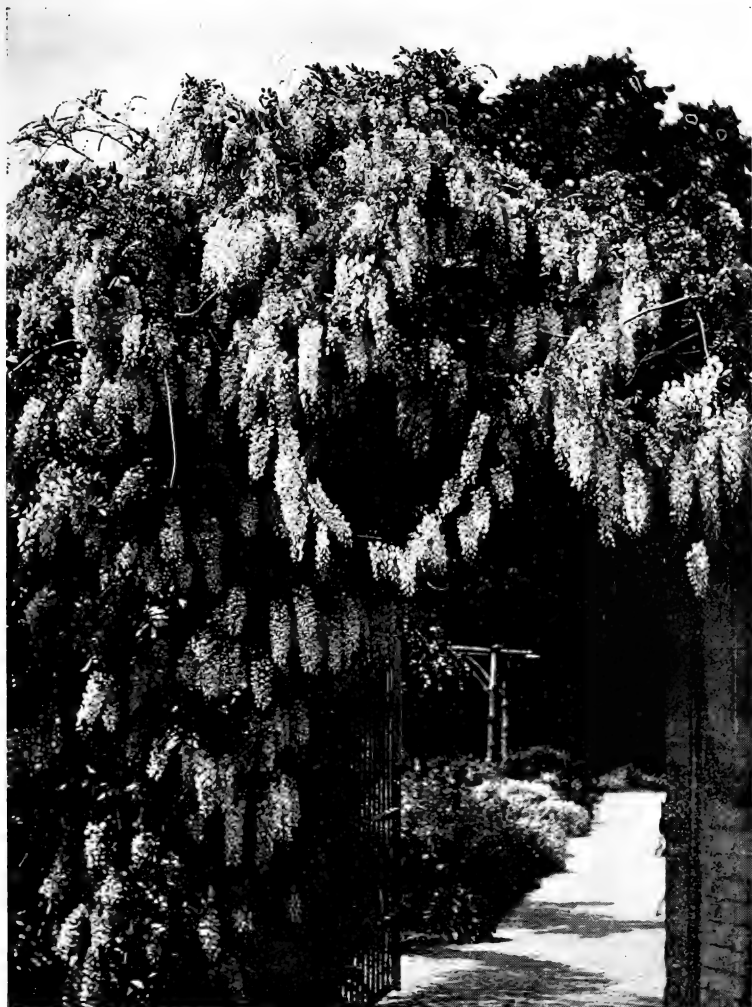
A tent pitched near or beneath a shady tree on the lawn is useful, but lacks many of the comforts and conveniences of the old-fashioned garden-house, often of good design and permanently built of local stone and timber, thatched or tiled, and half-hidden by Roses, Jasmine, Honeysuckle, or Clematis, with Yews, Mallow, Wistaria, and Hollyhocks near to or around the rustic porch, and carpets of Mignonette and Musk, or of Violets, and white-fringed Pinks, or spicy Carnations beneath the diamond-paned windows or beside the snug door.

In large public gardens, people are apt to look for gorgeous display, but a private garden is really a domestic shrine of quiet and peaceful enjoyment. A garden near one's dwelling delights us best when it is restful and refreshing ; startling effects are pleasant now and then, but they are of all things the most wearying to live with, however good, in their own way, they may be.

What pictures eighteenth and nineteenth-century artists, Birket Foster and many others, used to draw of flower-girded and creeper-wreathed cottages and garden houses of their times! Even to-day as it were Mrs Allingham has kept up these traditions and has given us charming glimpses of gardens, Carlyle's at Chelsea with the man himself, and delightful cottage gardens, surrounding red-brick houses, with sunny glimpses of luxuriant vegetables, heavily laden fruit trees, and flowers glowing brightly in the sun.

A list, however complete, of fragrant flowers and leaves, would not help much in the real art of making a sweet-scented garden. It must be an evolution or real growth, an individual development, and not a mere suggestion, or copy of a garden elsewhere. A real garden is quite as much a work of art as is a statue, a picture, or a book, and so far should be an original creation; no one can make a garden so well as can many of those who are to live in it or near it for at least some considerable portion of the year. Public parks and gardens, only to be seen now and then by visitors, are often made bizarre and glaring or intricate and profuse, to please all sorts and conditions of visitors, most of whom are without art principles or refined judgment of their own. Brilliant colour effects and violent contrasts that pass muster in public places, are often quite fatal to all quiet and repose in private gardens. Of course the same is true as between the shelters, bandstands, and garden-houses of the parks. That they are convenient at times may be true, but they lack much that we expect to find in good private places.

But we must return to the garden house, by saying it may be anything in size from Uncle Toby's sentry-box to a tithe barn, indeed an old barn or stable may now and then be transformed into a garden-house with the best of results. In one case I know of, an old and



WISTARIA OVER A GATEWAY

derelict manor house was repaired, and both house and grounds, including some magnificent walnut trees, added as an extra attraction to a very fine old country house, built on similar lines although of a later date. Around this a very pretty new garden was feelingly made, and it is now most convenient as a place for picnics, or as an open-air nursery for the children, while in winter its upper rooms are used to accommodate the overflow of bachelor sportsmen, or visitors from the big house beyond. No matter how grand and comfortable one's ordinary residence may be, we all at times like a change, and like children perhaps, "make believe, hard," that we enjoy simplicity and frugal fare in a hermitage, even though it be one near home! It seems like a little bit of Eden over again, and, in such a quiet and flowery little retreat we are apt to think we sleep and work better, or that in some cases that even our dreams come true!

After all, the artist of either sex is always more or less a child, and who shall say that his or her whims and foibles, unknown, it may be, to hard-headed business men, are not assets more or less valuable to us all as a people?

One word more, and I have done; one charm of a garden, or of a garden-house, or mere shelter indeed, is that any one can make or form them at their own sweet will—each so as to suit and harmonise with its surroundings. Both enclosed gardens, and garden houses, are often better for being formed slowly and carefully with all due regard to local advantages, or soil or shelter and water-supply. This was the way many of our oldest and best of fine old country houses and gardens were formed. Owners who saw clearly what accommodation they wanted, and were likely to want later on!

A good master-builder, carpenters, and smith, all local

labour and materials, no set or formal plan that must be adhered to even if found wrong, the work could be done slowly and carefully, altered or rearranged as it went on, everything primarily designed for present and future generations, for use rather than for beauty, although as in all designs of a sterling and permanent kind, beauty in due proportions, and in the proper place, always stole in and made its mark. Built for use, and well built, practically without the draftsman, or "our young man" in the office, and what is the result? The present-day architects and landscape gardeners are copying or modelling all their new houses and gardens on those of the past—building in the main for beauty, which as well as sterling domestic conveniences inside the outer walls, very often evade them despite the plans and estimates and contracts so carefully prepared and signed.

THE SMELL OF THE TOWN

All tropical towns have a peculiar odour or fragrance of their own, Colomba and Manilla being quite different in this respect to each other, just as are Penang and Singapore.

Arab Market at Marrakesh.—"A smell of spices, mingled with horse-dung, hung in the air, as from the shops the bags of asafœtida, bundles of cinnamon, attar-of-roses, tamar-el-hindi, and the like gave out their various scents to mingle with the acrid odours of the crowd."—From "*The Mouth of the Sahara*," R. B. Cunningham, in "*Success*," p. 64.

In "*Naples, Past and Present*" (Norway), p. 327, the author points out that the arms of the ancient city of Majori consist of a sprig of Marjoram on an azure field—a token of the deep blue sea that laves the cliffs which in springtime are from top to bottom one fragrant field of aromatic and deliciously scented flowers. Myrtle is

knee deep, Rosemary and Marjoram root into every cleft, and a thousand other herbs grow rank along the mountain side and fill the dewy air of morn and eve with thymy fragrances blown out of each hollow and ravine. From Majori to Salerno and Pæstum in spring flowers are spread out like Persian or Arabic prayer-carpet in the genial sunshine, for sun heat and light is the alchemist that distils perfume and flavour for blossoms and fruitage alike.

The London Spice and Drug Market is a most important institution in the City, where all sorts of scented or flavouring products are sold by the pound or hundred-weight and often by the ton.

INSECTS AND BACTERIA

There is a scent-producing organ in the abdomen of the worker of the honey-bee (*Apis mellifica*). It was described by Nassenoff in 1883. The peculiar odour emitted may possibly be of use for signalling purposes.

Even the bacteria are in some, even if not in many cases, scent or aroma and flavour producers. In beer and wine, butter and tobacco, they set up fermentations that develop fragrance and flavour alike. *Pseudomonas fragariae*, a bacterium isolated from forage beet and cultivated on various media, yields a very pronounced ripe strawberry-like odour. That there are luminous or so-called phosphorescent bacteria is also well known.

ESSENTIAL OIL IN FODDER CROPS

When hay is cut, the odour produced is due to a volatile oil. This material is lost when the hay is overcured or exposed to leaching rains. The odours of all fodder crops are imparted by characteristic essential oils. In the preparation of hay and fodder crops, it should be the aim to prevent, as far as possible, any

loss of essential oils. This can be accomplished by cutting the fodder before it is overripe, and then avoiding bleaching and leaching. (*Snyder in "The Chemistry of Plant and Animal Life."*) Salt, or cattle-food spices, are used to improve hard hay and forage.

FIGHTING THROUGH THE NOSE

In one of the conversations reported in his "Life," Tennyson once said that this is "an age of stinks and smells." Undoubtedly the two German chemists who discovered a new compound of sulphur the other day are doing their best to make it so. The stench of the new compound is described as past belief. The atmosphere was made unbearable for many yards around, and the two operators, with a look of unspeakable agony, held their hands to their tortured noses. At length the smell began to penetrate farther, and protests rained down on the unhappy men, until finally, almost desperate, they ceased their experiments. The old "stink-pots" of China were as nothing to it! What a vista this opens up for the fighting of the future! Even Lord Roberts could not stand up long against a stench so prodigious!

CLOSE INTERCONNECTION OF THE SENSES

But we may just glance at the connection that exists between the so-called five senses, our instincts as opposed to our reason. Touch and taste are intimately connected, and both taste and smell together form what we call flavour, aroma, or bouquet.

So also we like to connect seeing and hearing at the opera or theatre or concert, nay, even at lectures, where

¹ The great Swedish naturalist Carl Linné, indeed, did pay some attention to plant odours, which he roughly divided into seven groups or classes, three only of which were pleasant, viz. the aromatic, the fragrant, and the ambrosial. Linné also called the night-scented flowers *flores tristes*, because generally of a dull green or brownish hue.

we call in the aid of lantern slides or diagrams when actual things themselves are not available. Some day we shall be able to show you different odours on the screen, and I am sorry that I cannot so show you some of them to-day.

Sight, taste, touch, smell, and hearing have all been gratified at once from the earliest civilised times in all countries.

Things "pleasant to the eye and good for food" have always been an attraction since the days of Eden, and are sure of a ready sale in our markets of to-day. But, after all, the primitive senses, noble as they are, are not everything. Even our very highest sensual education is merely instinct, and instinct is a blind and unreasoning expression of animal feeling: "Man cannot live by bread alone"; "Let him who hath two loaves of bread sell one and buy flowers of the Narcissus, for bread is food for the body, but Narcissus is food for the soul." Feed a man as you will; clothe him in fine linen, purple, and gold; give him wine and music and all other luxuries, and he will ask for "the feast of reason and the flow of soul." He will ask you for brotherly sympathy and human fellowship, for "a temple not made with hands."

When we look back a long way in the world's history, we may get a glimpse of those great primæval foundation stones—the five senses—on which all subsequent human intelligence and culture are superimposed. Since man first existed on the earth his nose has helped his eyes in the selection of his food, and this is a trait general to all the higher animals. If you give any of the larger apes some edible substance of which he has no previous experience, he at once tests it with his nose after seeing it, and by the nose—the sense of smell—all the animals are very largely guided; and we ought, I think, to cultivate this primitive instinct and be guided by it ourselves more keenly than we do.

At a very early period in man's history it would appear as though his senses, or instincts, and his reasoning powers were very unequally balanced, so that the senses often overpowered the mind. Savage man develops his brain mainly through the exercise of his senses ; but a cultured man of to-day prides himself on his self-abnegation or altruism, and so his senses are developed and educated only under the brake-power influence of his brain. In a word the senses are very apt to say to us, " It is a lovely morning, let us go out and shoot something " ; but our higher mental nature whispers, " No ! Let us try to make all beautiful living things as happy as we can." Remembering this dual nature in ourselves, the conflict between the animal instincts and our reasoning powers, I think you will see that it is extremely probable that men and women of old were led to enjoy and use sweet-smelling natural products instinctively long before they could perceive any sanitary value in perfumes.

So much, then, for the early history, and you will naturally ask me what I have to say about sweet-scented leaves. Well, my object is now to try and persuade you, and all gardeners, to place a higher value on sweet-smelling leaves than even some of you do already. I want you to rate all fragrant foliage quite as highly as you now profess to value sweet-scented blossoms. I also wish to point out some of the essential differences, and advantages, even of foliage leaves, as opposed to those floral leaves we call flowers. I am also particularly anxious to try and show that there is a sanitary basis, rather than a merely sensuous reason, for the usage of sweet odours and vegetable perfumes, whether the same be fresh or dried, living, dead, or distilled.

Modern researches have amply proved that ozone is developed when the sun shines on most kinds of fragrant plants, such as flowers, fir and pine trees, and sweet herbs generally.

WHAT IS ODOUR OR PERFUME?

Now let us ask ourselves what odour or perfume really is. I asked a very celebrated chemist this question the other day, and he said frankly that odour, like electricity and many other things, was a very subtle and "unknown quantity," and that no one knows absolutely and precisely what it is, nor why one odour should please us, and actually invigorate or stimulate us, while another disgusts us so much that we sometimes call it by another name. Odour seems a product given off by the action of oxygen on essential oils—a vapour being evolved under certain physical conditions of heat, moisture, or pressure, and even light and darkness now and then have some share in its evolution.

PERFUMES OF FLOWERS

Recent investigations have shown that the perfumes of flowers are often modified by growing them under coloured glasses, that some plants are fragrant only at night and others only in hot sunshine, that the seasons affect the odours, and that temperate climates are more favourable than tropical ones. A science paper says that these perfumes powerfully affect the human organism, often producing a kind of intoxication, and sometimes even giving rise to serious nerve troubles. The vapours of most essences—such as Cinnamon, Lavender, and Eucalyptus—have proved powerful antiseptics, and flowers of delicate perfumes quiet the nerves of invalids. Flowers harmful to the sick, we are told, on the other hand, are the Violet, Lily of the Valley, and Oleander.

ODOUR AND THE IMAGINATION

An American psychologist recently tried a curious and interesting experiment upon an audience chiefly composed of the members of the University of Wyoming. The pro-

fessor enlarged upon the assumed fact that an odour of a pronounced character rapidly permeated the atmosphere in an enclosed space. This was at once to make appeal to the sentiment of what is called popular science, and to excite attention to the highest pitch. The lecturer produced from a specially constructed box a phial carefully wrapped in cotton wool, and he asked those amongst the audience who detected the smell of its contents to raise their hands. He told his hearers that he was absolutely certain that not one amongst them had ever previously experienced any odour from his chemical combination, and at the same time that they need not be apprehensive of any poisonous effects. Thereupon the bottle was unstoppered and the contents poured upon the cotton wool, the experimenter turning his head away. Then he produced a stop-watch and waited for developments. In fifteen seconds the occupants of the first rows raised their hands, and after the lapse of forty seconds the "smell" had penetrated to the uttermost ends of the hall. All hands were now uplifted. The "reserve seats" began to exhibit symptoms of uneasiness—more than that of positive illness, and some retired complaining of the "strong smell." The experiment, at the request of those present, was immediately brought to an end. The sting of the story is found in its tale. The professor's magic phial contained nothing more harmful than pure distilled water—suggestion did all the rest! It was a paltry trick, some may say, but there are few who will conclude that it was wholly destitute of scientific value.

POINTS ABOUT PERFUMES

Much can be said in favour of perfumes made by natural means from natural sources. They have great advantages over those compounded by the chemist. Perfumes made from flowers possess a special health

value. If you are nervous and irritable, if the minute you take a book in hand, or bend over delicate fancy-work and fine stitching, you feel one of those dreadful threatening headaches, never be without a bottle of pure lavender perfume, as nothing is more soothing or quieting to the nerves. For the sick room nothing can equal eau-de-Cologne. In hot crowded rooms it will often ward off an attack of faintness. Otto-of-roses and all scents in which Rose is the principal ingredient are highly tonic and invigorating, if of good quality.

FLOWERS' MYSTERIOUS PERFUME

One of the most mysterious elements of flowers is the perfume, the essential action of which in plant life cannot be demonstrated by the wisest of our scientific men. Gas can be weighed, but not scent. The smallest known insect that lives in the heart of a rose can be caught by a microscope lens and made to give up the secret of its organisation, but what it is that the warm summer brings us from the wild flowers of the hillsides or wafts to us from the choice exotics of the hothouse, no man has been able to determine. So fine, so subtle, so imponderable, it eludes weights and measures. (*v. p. 10 and 11.*)

INTERESTING TO SINGERS

Singers and public speakers will do well to note the latest discovery of that wonderful instrument, the laryngoscope. It appears that in several cases, where tumefaction of the vocal chords had set in, it was found that this was caused by the use of violet perfume. This and other discoveries of a similar nature have led most of the leading teachers of singing strictly to forbid their pupils to use any kind of perfume. So long as a flower has any odour, it is harmful; but, curiously enough, the greatest offender of all appears to be the Violet.

THE OLD BROCADE

In a black oak chest all carven,
 We found it laid,
 Still faintly sweet of Lavender,
 An old brocade.
 With that perfume came a vision,
 A garden fair,
 Enclosed by great yew hedges ;
 A Lady there,
 Is culling fresh blown lavender,
 And singing goes
 Up and down the alleys green—
 A human rose.
 The sun glints on her auburn hair
 And brightens, too,
 The silver buckles that adorn
 Each little shoe.
 Her 'kerchief and her elbow sleeves
 Are cobweb lace ;
 Her gown, it is our old brocade,
 Worn with a grace.
 Methinks I hear its frou-frou,
 And see the sheen
 Of its dainty pink moss-rose buds,
 Their leaves soft green,
 On a ground of palest shell pink,
 In garlands laid ;
 But long dead the Rose who wore it—
 The old brocade.

M. G. Brereton, in "A Celtic Christmas," 1903.
 I. H.

"A few notes of a buried song, the perfume of trodden grass. The odour of a flower, an old familiar word or two, even commoner things have at times enough magic in them to uncover long-forgotten faces, disclose distant lands or vanished scenes, although in



MAGNOLIA HAILEANA

one's memory the mould has covered them for years."—
"Scrapper Halpin," *Scribner's Magazine*, 1903, p. 188-89.

Medicines of all kinds are very popular in China, and the Chinese experts themselves believe they operate or affect the patient by their taste; thus, "all sour medicines are capable of impeding and retaining; bitter ones cause looseness and warmth; sweet ones again possess the qualities of strengthening, harmonising, and warming. Acids disperse and prove emollient, while salt medicines possess the properties of descending; they act also on hard and tasteless substances, open the pores, and promote healthy discharges." Thus a Chinese physician explains the use of the five tastes. As a fact, indeed, the present state of *materia medica* or of the pharmacopœia in China is pretty much what it was in Europe three or four centuries ago.

Ammonia (spirits of) and variously perfumed aromatic vinegar go to the formation of what is called "smelling-salts."

The vinaigrette was the descendant of the pomander, and the ancestor of the modern scent-holding charms. They were made of silver or in gold, with jewels or stones, and were chased elegantly or more rarely enamelled, and were to many ladies as much in fashion as the fan itself, being carried on all state occasions. Mrs Head and other collectors of *bric-à-brac* or *bijouterie* have beautiful collections of them.

"The old-time pomander, we are told, held a ball of paste made of aromatic gums pounded with rose-water and blended with wax, and occasionally with apple pulp, but this was replaced in the vinaigrette by a bit of fine sponge saturated with vinegar made fragrant by the infusion of herbs and spices, the smell of which was certainly more refreshing and less clogging than the strong and somewhat sickly sweet perfumes contained in our twentieth-century 'scent charms.'"

LEAF ODOURS *VERSUS* FLORAL ODOURS

When we compare leaf odours with flower odours we find a considerable difference between them. Thus in the case of the orange there is a difference between the essential oils of the flowers and of the leaves, and of that of the rind of the fruit, which afford three different kinds of perfume.

Then floral odours are generally positive, being exhaled by most flowers spontaneously as it were, so that you must inhale floral odours whether you like them or not.

Leaf odours, on the other hand, are latent or negative, and are rarely to be detected except after the leaves have been touched, pressed, or bruised. Both leaf and flower perfume depends on the same essential oil being in different states or conditions.

Floral odours again are emitted only at particular times, that is to say, just when the andrœcial whorl attains maturity, and the flowers are quite fresh; and even then, in the case of many Orchids and other flowers, their scent is intermittent, and only to be perceived at different times of the day or night—this time, as we suppose, having some connection with the diurnal or nocturnal visits of the insects that act as marriage priests in their native wilds. But, on the other hand, leaf odours are persistent—“ready if sought” seems to be their motto—and not only are scented leaves fragrant when green and fresh, but often retain their perfume long after they are yellow or brown and sere. Mr Hudson, of Gunnersbury, to whom I am indebted for a collection of scented Pelargonias, tells me that the old yellow or brown leaves of these charming plants are sweeter even than the fresh ones. This is doubtless owing to the water of the leaves having evaporated, thus leaving behind the essential oils in a more concentrated form. This permanency of odour is a strong recommendation, and no greenhouse or

conservatory or boudoir need be wanting in delicate perfume if plenty of sweet-leaved plants are grown.

PERFUMES, VARIOUS, HEALTHY, OR INJURIOUS

Somebody has said that the whole world is divided into those people who like dogs and horses and those people who dislike horses or dogs. Well, it is somewhat similar in the case of perfumes. Some folks enjoy them, while others say that they dislike them; and to some few people, especially to vocalists, some particular perfumes are actually not only repellent but injurious. This is even true in the world of animals and insects, as we all well know. Thus cats love Cat-mint, Valerian, and Nemophila. Dogs like *Chenopodium vulvaria*.

Nearly all cattle love Fenugreek in their food or forage. The perfume of Lavender, Rosemary, Cloves, Cinnamon, or Camphor is most deterrent or offensive to moths; hence we constantly use them in our linen closets or drawers and wardrobes in which furs, etc., are stored. In the tropics I found that Camphor-wood chests were the only receptacles (other than close-fitting tin cases) that defied the ravages of the termites, or so-called white ants; and even the hungry mosquito may be kept at bay by torches composed of Dammer-gum and Camphor combined. So we see there are two sides to the shield—two sides to the perfume question mostly attractive, but sometimes deterrent or repellent to both mice and men. Nor need we wonder at this when we observe how widely dissimilar men really are. Socrates objected to perfumes, and that may have been the reason Xantippe objected to him. Can you imagine William of Normandy or Oliver Cromwell or John Knox with scented handkerchiefs? Of course not. Nor can you imagine Charles II. or Elizabeth or Mary Queen of Scots without one. The spice-box was a great institution on the hall

table in mediæval times. "If you can't sit above the salt sit close to the spice-box" is an old proverb, *i.e.* in any case do the best you can.

BLEND, BOUQUETS, OR MIXED PERFUMES

Bouquets, mélanges, or particular blends of perfume are easily made pretty much as a florist arranges flowers, or an artist his colours; but the late perfumer Dr S. Piesse pointed out that to make a proper bouquet of primitive odours the kinds so used should agree or correspond with a scale or gamut, just as do the musical notes. Dr Piesse goes so far as to say that one false note amongst odours will destroy the whole harmony of the chord, just as in music or in colour. His odophone, or scent scale, for chord of C, is as follows:—

Santal is C bass, 2nd line below.

Geranium is C bass, 2nd space.

Acacia is E treble, 1st line.

Orange flower is G treble, 2nd line.

Camphor is C treble, 3rd space.

ANOSMIC OR HYPEROSMIC PEOPLE

We have often heard of people who are wholly or partially blind to colour; and there are also anosmic people, who have wholly or in part lost the sense of smell; and there are some people who possess a sharp sense of smell who nevertheless cannot detect some few particular odours. In contrast with the anosmic folks we find a set who are decidedly hyperosmic—they "smell a rat" very quickly, and are often rabid about sewers and other sanitary matters. These acute-nosed people make excellent perfumers, and to their ranks belong the best and most successful buyers of such products as wine, tea, hops, drugs, perfumes, tobacco, coffee, and spices: they form their judgments through

the nose just as accurately as do the dealers in jewels and pictures and artistic objects generally by means of their sharp eyes.

Honey gets all its best and most characteristic flavours from the various aromatic herbs and flowers on which the honey bees feed in various countries or at various periods of the year—such as wild Thyme, Heather, Eucalyptus, Sage, Clover, and many other things. Indeed, taking a hint from nature, it may, some day, be found possible to feed bees on flavoured syrup, and in that way obtain any flavour desired.

HYPEROSMIC SKILL OF EXPERTS

A clever perfumer can readily detect any special odour as used in the so-called “bouquets” of the scent dealers. To do this he pours out a little of the spirit which holds the perfume and rubs it in the palm of his open hand. The alcohol evaporates with the warmth, and the scent is left comparatively pure. All the principal odours, such as violet, rose, jasmine, or musk, are easily detected, but an expert will analyse a liquid in which three or four perfumes are blended together and give the relative proportions of each one used simply by this primitive nose test, a fact which shows how perfect our senses may and do become when practically educated by the help of our brains.

EDUCATED NOSES

Men whose olfactory nerves are so highly developed that they can differentiate between odours that the uneducated nose cannot discern are employed by chemists, tea-importers, and the large wine and liquor firms. A perfectly trained nose is of the utmost use in the compounding of perfumes, and it therefore happens that practical chemists should train their sense of smell to a

very high pitch of perfection. Artists in sniffs can improve their talent by constantly exercising it. It has been proved that blind people depend a great deal upon their sense of smell. The throat as well as the nose of a professional sniffer must be entirely healthy, for any imperfection in either locality is apt to affect the nasal organ deleteriously. The very greatest care has to be taken against catching colds, for influenza or catarrh of any kind will literally put him off the scent for many days, and sometimes for months together.

MAKING TEA SCIENTIFICALLY

Professor Goodfellow, the well-known English analyst, gives these rules for making "good" tea:—1. Always use good tea. 2. Use "two" hot, dry earthenware teapots. 3. Use soft water which has just got to the boil. 4. Infuse about four minutes. 5. Pour off into the second hot, dry teapot. 6. Avoid second brews with used tea leaves. The fact that tea, as served in France, is so often bad may be accounted for by the omission of some one, or perhaps all, of the above rules in its preparation. They are all necessary to make a cup of really good tea, and if they were more often strictly adhered to tea would oftener be a delicious beverage. Even at the best "afternoon tea" rooms in England, America, and France I do not believe that "two" hot, "dry" teapots are often used to make tea "fresh for each customer," or that the tea-leaves thereafter are thrown away.

THE TEA-TASTING ART

The art of tea-tasting in commercial houses, which formerly proved detrimental to the health of so many men, has now been reduced to such accuracy that the tasting part of it has been practically eliminated in all

but the name, and the tea is often tasted now by sight and smell. Boiling-water is first poured on an accurately measured portion of the leaves. In a few minutes the liquid shows some tint of green or brown, and the length of this time and the shade of the colour produced are important elements in the test. The tester then, with the aid of a spoon, inhales the rising steam from the mixture. This is called "getting the aroma," and is the most important part of the test. He may perhaps in some case actually taste the liquid, but this is no longer generally done. Colour, aroma, and the "liquoring" qualities of the tea are sufficient grounds to judge by. The old-fashioned tea-taster was a high-salaried expert, who frequently ended his career with heart disease or fits, the result of slow poisoning from the quantities of adulterated tea he tasted; but now, as a rule, every merchant tests his own teas by the recent and approved method.

COLOUR AND SCENT EXPERTS

"It is remarkable how well a perfumer learns to recognise a scent," remarked one of several clever business men met together by chance in the coffee-room of a hotel in Edinburgh. "In testing a sweet-smelling liquid he wets the base of his thumb with a little of it. Then he rubs the place rapidly with his right hand. The alcohol in which the essence is dissolved, being the more volatile, is at once evaporated, and the substance which emits the odour remaining behind, he can smell it in its purity. Of course it is an easy thing to recognise the principal odours that are in use, but when several are mixed, as is common, his task becomes more difficult. Yet a skilled man can not only tell you what three or four perfumes enter into the composition of the one he is testing, but, also, roughly, the relative proportions of each." "It is easy to tell the relative amount of wool

and cotton in a piece of coloured underwear if you know how," said another man. "Men who have made the subject a speciality can do this by holding the cloth in the light and looking along it. The cotton and wool can be distinguished by the difference in their colours, which exists, although the same dye was used for both. The untrained eye could hardly detect the fact that the cloth had two shades, but the skill that comes from long practice makes the thing simple."

SCIENTIFIC NEGLECT OF ODOUR

It is curious to note how careful botanists have been to tell us the shapes of leaves and the arrangement and number of sepals, petals, and stamens of flowers; while in the great majority of cases such vital matters (to the flowers and ourselves) as colour and perfume have been totally ignored. Nowadays, however, we are all most anxious to know not only what plants are, but more especially what they do, and how they do it. We are beginning to perceive that colour and perfume are quite as essential as are the organs that produce them; that physics and physiology must be studied together, since the end is greater in importance than is the means.

Mr Edison and others have said that the human mind can scarcely grasp the fairy-like sensitiveness of the micro-tasimeter to heat and moisture. "The conditions relating to the registration of moisture belong properly to the province of the odoroscope, which is a modification of the tasimeter,¹ and so named primarily from its ability to measure odours quite inappreciable to the unaided senses."—"The Life and Inventions of Thomas Alva Edison," by W. K. L. Dickson and Antonia Dickson. London: Chatto and Windus. 1894. Pp. 113, 114.

As colours really appear different to different observers, so also do odours and perfumes. If you ask ten different

¹ Measures 1,000,000th part of a degree Fahrenheit.

people to smell a flower they don't know, and tell you what it smells like, you will get at least several different replies. Japanese ladies have a game of guessing the names of perfumes, which the hostess carefully prepares and blends or mixes in another room.

Apart altogether from repulsive odours, even the perfumes of some flowers may affect breathing or digestion, or may cause dizziness and fainting. Vanilla, *Pittosporum*, Japanese Privet, some Lilies, Tuberose, Jasmine, and Lilac are troublesome to individuals. *Datura arborescens* and the flowers of Oleander seem to exercise a narcotic effect and cause drowsiness. Stale Violets in water in a room cause nasal catarrh in people susceptible. Some people seem naturally sensitive to the bad influence of certain perfumes, which may not affect others. The inconvenience caused seems mainly due to the scent or perfume, and not to the influence of the pollen, which in the case of grasses and other flowers may be the cause of what is called "hay fever."

FLORAL ODOURS EVANESCENT; LEAF ODOURS PERMANENT

Flower perfumes, as we have said, are positive, being mostly given off whether we like it or not, and some people are so extremely sensitive to perfumes that those of Hyacinths, Narcissus, some Lilies (especially *L. auratum*), and even Roses prove disagreeable, and at times actually injurious. We are told that "one dog's meat is another dog's poison," and floral odours that delight some people prove extremely disagreeable to others; and though "aromatic pain" of this kind may not actually kill folks, it is none the less a nuisance for the time it must be endured. To all those who suffer from strong floral perfumes I can strongly recommend the more negative qualities of fragrant leaves.

THE STUDY OF VEGETABLE ODOURS

I do not know of any other subject so worthy of study as this intricate one of odours or perfumes. We ought to educate our noses better than we do. The nose is really a sensitive organ, placed as a sentinel at the very entrance or gate-house of the lungs; and if our noses are not alert and faithful we lay ourselves open to all sorts of diseases or ills that flesh is heir to. The odours or essential oils of plants are essentially antiseptic, and the wonder is that pathologists have neglected their health-yielding virtues so long. We have had Pfarrer Kneipp with his wonderful water cure; we have had the grape cure; and I hope soon that some clever specialist will start a hospital or "scent cure," in which sweet odours will play a part not inferior to other medicants that act only on the stomach, and leave the lungs to do the best they can alone.

Even in the arts and manufactures the sense of smell is now and then, even if not often, very valuable.

"The experienced indigo-dyer is said to know when the fermentation has reached its proper point by an acute sense of smell, where no more scientific tests are found to answer. If the proper moment is not seized, the vat becomes useless."—"The Life of William Morris," by J. W. Macchall, p. 317.

FLORAL AND LEAF ODOURS ANTISEPTIC

One good effect gained by diffusion of perfumes by the burning of fragrant herbs, or gum resins, in the hot and too often stuffy wards of hospitals in summer time would be the banishment of the flies that too often fret and irritate the restless sufferer. Then we might adopt with advantage over the doors and windows of hospital or sick-room alike the perfumed curtains or awnings of fragrant grass called "cuscus tatties" in the East. These



HERBACEOUS PHLOX

are now and then sprayed with water from a syringe, and the evaporation or the grateful odour, or perhaps both, cools and sweetens the room at the same time. Mrs Earle, in that charming work "Pot-pourri from a Surrey Garden," tells us she places dried leaves of Verbena, Lavender, and sweet-scented Geraniums in bags, and places them under and behind the cushions of her chairs, much to the enjoyment of her visitors, who wonder from whence the delicate perfume comes. In the East it is a common practice to place bags of lime, or orange leaves and lemon-grass, under the mats near the doors, so that the pressure of each one entering aids unconsciously in perfuming the rooms. In Borneo I saw the girls of the villages wrapping or coiling their glossy black hair well oiled around Jasmine or Champac flowers, so that by this personal enfleurage their coiffure was a sweet one next morning. I believe also that by their thus perfuming themselves they to a large extent escape malarial fevers, so common in low-lying tropical regions.

PERFUMES AND TEMPERATURE

The late Professor Tyndall made a series of very elaborate experiments as to the absorption of heat by odorous vapours. Their action is enormous in this direction as compared with that of pure (*i.e.* unscented) atmospheric air; and it was found that the least energetic of the odours employed, viz. patchouli, had thirty times the cooling effect of fresh air, and that of the most energetic, viz. cassia, had actually 109 times the effect.

Perfumes	Absorption per 100	Perfumes	Absorption per 100
Patchouli	30.0	Lavender	60.0
Santal	32.0	Lemon	65.0
Geranium	33.0	Portugal	67.0
Oil of Cloves	33.5	Thyme	68.0
Attar-of-Roses	3.65	Rosemary	74.0
Bergamot	44.0	Oil of Laurel	80.0
Neroli	47.0	Cassia	109.0

BENEFIT OF PERFUMES FOR BURNING

Professor Mantegazza, of the Institute of Lombardy, long ago pointed out that the burning of perfumes or incense, such as benzoin, in sick-houses, or hospitals, or churches was a practice based on common-sense. If this burning merely disguised or masked insanitary odours, we might not reap much material benefit by the practice. But the burning creates or assists ventilation and oxidisation, and then acids are produced that neutralise the effects of bacteria or of foul air, while the aromatic fumes given off are inimical and preventive of infection, being often fatal to bacterial life.

The ancient ceremony of personal fumigation amongst the Arabs is well known. A brazier is used containing a few glowing bits of charcoal over which is sprinkled incense of benzoin, fragrant gums, and the powder of sweet herbs. Over this each guest in turn sits down, spreading his robes out so as to confine the fumes for a few seconds or so around the lower part of his body. To do this properly is a sort of ritual, sometimes accompanied by prayer. The Friday baths, anointing, fumigations, painting, and perfuming of the women in Arabia and other Mahomedan countries, is a ceremony to which European ladies are now and then admitted as a great compliment.

THE SPICE ISLANDS OF EUROPE

WHEN Boswell went to Corsica, and had to walk through the mountains to his first stopping-place on the night of his arrival, he tells us that "at first he was refreshed and struck by the fragrant, aromatic odours of the shrubs, which smother the lower slopes—the marvellous and uniquely-scented *Macchi*, the Myrtle, *Cistus*,¹ White Heather, and a thousand other plants of whose names he was ignorant."

In that delightful book "In Sicily," by Douglas Sladen, there is much said about the sweet wild flowers, the herbs, and the fragrant trees and shrubs of that sunny island, which is really more Greek than Italian in its botany as in its ancient architecture.

"I cannot attempt to describe the garden flowers of Syracuse,—irrigation will do anything in that fostering climate. . . . I have purposely left to the last the masses of Rosemary and Vermouth, cultivated and wild, the Wild Mint, the Horse Mint, the Pepper Mint, the Wild Sage and Wild Thyme, and a score of other aromatic and health-giving herbs." . . . Again he says, "Sicily is one vast herbarium. In every old wall, on every uncultivated patch grows some medicinal herb. There are shops in every city devoted to the sale of dry herbs, and looking like astrologers' dens. Every man, woman,

¹ *Cistus monspeliensis*—narrow foliage, white flower, common along the Riviera, strongly scenting the air after rain with its resinous odour. Corsica is covered with it; and Napoleon said he should know his native land with his eyes shut from the scent of this plant.—*C. Bicknell*, "Flowering Plants and Ferns of the Riviera."

and child knows the names of the herbs, and most adults are acquainted with their medicinal values. Fever looms large before the minds of the poor Sicilians, though really the island is not at all malarious when compared with Sardinia. I for one should be sorry to see the faith in herbs die out in Sicily; it is one of the most mediæval touches in this last refuge of the Middle Ages" (p. 278, vol. i.).

Near the Convent of the Cappuccini and the Latomia or rock prison at Syracuse are "huge bushes of Rosemary on which the laundress dries her linen without any thought of the aroma, and in front of the Villa Polita are the finest wild stocks I ever saw, filling the air with rich and tender fragrance" (p. 148, vol. i.).

Even the Catholic mystics of the Middle Ages made of material things such as sweet flowers an allegory of the spiritual and the immaterial. Of Suso, for example, we read:—"Thus he kept carnival, and thus on New Year's night when young men in their folly go out to make their sweethearts give them garlands, he too would go to his eternal love and beg of Him a wreath. So too on May Day Eve he would set up a spiritual May-tree, saying—'Hail, heavenly May-bough of the Eternal Wisdom!' I offer thee to-day in place of red Roses, a heartfelt love; for every little Violet, a lowly inclination; for all Lilies, a pure embrace; for all flowers of heath or down; forest or plain, tree or meadow, a spiritual kiss; for all songs of little birds on a May Day flight, praises without end."—*Edinburgh Review*, July to October 1896, vol. clxxxiv. p. 314.

In the natural woods at Cap Martin and elsewhere along the Riviera the natural woods are full of aromatic shrubs and sweetened plants of other kinds. Rue, Rosemary, Myrtle, *Lentiscus* (Pistachia), and Thyme, being especially abundant and grateful, filling the genial

atmosphere with spicy perfume on a sunny day, even in winter. All are plants mentioned in Greek and Roman classics, and to Rosemary as a bee plant, the peculiar flavour and excellence of Narbonne honey is due.

Evelyn, in the dedication of his "Fumifugium" to King Charles II., notices especially the peculiar joys of Italy in the perfumes of orange, citron, and jasmine flowers, which may perfectly be smelt for divers leagues seaward.

RECIPES FOR POT-POURRI

“THE roses used should be just blown, of the sweetest-smelling kinds, gathered in as dry a state as possible. After each gathering, spread out the petals on a sheet of paper and leave until free from all moisture; then place a layer of petals in the jar, sprinkling with coarse salt; then another layer and salt, alternating, until the jar is full. Leave for a few days, or until a broth is formed; then incorporate thoroughly, and add more petals and salt, mixing daily for a week, when fragrant gums and spices should be added, such as benzoin, storax, cassia buds, cinnamon, cloves, cardamom, and vanilla bean. Mix again and leave for a few days, when add essential oil of jasmine, violet, tuberose, and attar-of-roses, together with a hint of ambergris, or musk, in mixture with the flower ottos to fix the odour. Spices, such as cloves, should be sparingly used. A rose *Pot-pourri* thus combined, without parsimony in supplying the flower ottos, will be found in the fullest sense a joy for ever.”—*G. H. Elwanger in “The Garden’s Story,” quoted by Mrs C. W. Earle in Pot-Pourri, pp. 241, 242.*

I. POT-POURRI

Take the rind of two lemons, cut thin, one pound bay salt, one ounce of powdered orris root, one ounce of gum benzoin, one ounce of cinnamon, one half-ounce of cloves, one ounce nutmegs, one grain musk, twelve Bay leaves, a few Sage leaves, Rosemary and Lavender cut small, one ounce lavender-water, one ounce eau-de-

Cologne, one ounce Bergamot. Mix all together in a pan, and add sweet flowers in their natural state as they come into blossom, stir up frequently—at least once a day. It must be put in a covered stone pot, with a wooden spoon to stir it with. At the end of two or three months this will be a sweet-scented mass ready to fill any number of pretty Japanese rose-jars. From time to time throw in fresh Rose petals.—*Recipes I. II. III. from "Sweet-Scented Flowers and Fragrant Leaves," by Donald M. Donald, pp. 47-49.*

II. POT-POURRI

Gather early in the day, and when perfectly dry, a peck of Roses; pick off the petals, and strew over them three-quarters of a pound of common salt. Let them remain two or three days, and if fresh flowers are added, some more salt must be sprinkled over them. Mix with the Roses half a pound of finely pounded bay salt, the same quantity of allspice, cloves, and brown sugar, a quarter of a pound of gum benzoin, and two ounces of powdered orris root. Add one gill of brandy, and any sort of fragrant flowers, such as Orange and Lemon flowers, Lavender and lemon-scented Verbena, and any other sweet-scented flowers. They should be perfectly dry when added. The mixture must be occasionally stirred and kept in close-covered jars, the covers to be raised only when the perfume is desired in the room. If after a time the mixture seems to dry, moisten with brandy only, as essences too soon lose their quality and injure the perfume.

III. POT-POURRI

Prepare two pecks of dry Rose leaves and buds, one handful each of Orange flowers, Violets, and Jessamine, one ounce sliced orris root and cinnamon, one quarter

ounce of Musk, one quarter pound sliced Angelica root, one quarter pound of red part of cloves, two handfuls of Lavender flowers, Heliotrope, and Mignonette, one half handful each of Rosemary flowers, Bay and Laurel leaves, three sweet oranges stuck full of cloves, and dried in the oven and then powdered in a mortar, one half handful of Marjoram, two handfuls of Balm of Gilead dried, one handful each of Bergamot, Balm, Pine-apple, and Peppermint leaves. Mix well together, and put in layers in a large china jar; sprinkle salt between the layers, add a small bottle of extract of new-mown hay and moisten with brandy. If the mixture becomes too dry, stir it, adding liquid or additional leaves when wanted for use. If the jar is tightly corked, this preparation will keep and be fragrant for many years.

IV. POT-POURRI

“Gather flowers in the morning when dry and lay them in the sun till the evening.

Roses.

Orange flowers.

Jasmine.

Lavender.

Thyme.

Marjoram.

Sage.

Bay.

} In smaller quantities.

“Put them into an earthen wide jar, or hand basin, in layers. Add the following ingredients:—

6 lbs. vi. Bay Salt.

$\frac{3}{4}$ iv. Yellow Sandal Wood.

$\frac{3}{4}$ iv. Acorus Calamus Root.

$\frac{3}{4}$ iv. Cassia Buds.

$\frac{3}{4}$ iv. Orris Root.

- $\frac{3}{4}$ ii. Cinnamon.
- $\frac{3}{4}$ ii. Cloves.
- $\frac{3}{4}$ iv. Gum Benzoin.
- $\frac{3}{4}$ i. Storax Calamite.
- $\frac{3}{4}$ i. $\frac{3}{4}$ Otto-of-Rose.
- $\frac{3}{4}$ i. Musk.
- $\frac{3}{4}$ ss. Powdered Cardamine Seeds.

“Place the rose-leaves, etc., in layers in the jar. Sprinkle the bay salt and other ingredients on each layer, press it tightly down and keep for two or three months before taking it out.”—*Quoted by Lady Rosalind Northcote in “The Book of Herbs,” p. 120.*

RECIPE FOR SWEET-JAR

“ $\frac{1}{2}$ lb. bay salt, $\frac{1}{4}$ lb. saltpetre and common salt, all to be bruised and put on six baskets of rose leaves, 24 bay leaves torn to bits, a handful of sweet Myrtle leaves, 6 handfuls of Lavender blossom, a handful of Orange or Syringa blossoms, the same of sweet Violets, and the same of the red of clove Carnations. After having well stirred every day for a week, add $\frac{1}{2}$ oz. cloves, 4 ozs. orris root, $\frac{1}{2}$ oz. cinnamon, and 2 nutmegs all pounded; put on the Roses, kept well covered up in a china jar and stirred sometimes.”—*Quoting Mrs Roundell—Lady Rosalind Northcote in “The Book of Herbs,” p. 119.*

SMEE'S PLAN OF CONDENSING FLORAL ODOURS

A very easy method of obtaining any special natural flower or lea odour is described and illustrated in “My Garden” (Smee), p. 227. The apparatus consists of a glass funnel with its narrow end drawn to a point, and filled with a mixture of lumps of ice and salt, by which a very low temperature is obtained. The funnel, on a retort stand, and a small phial or other receptacle below, is placed near flowering plants of Roses, Jasmine, Pinks or Mignonette, etc., and the

odour or odours evolved, together with moisture, are condensed outside the funnel and trickle down into the vessel below. Cut flowers may be used and the whole covered with a bell glass as here shown. The perfumed water thus obtainable is very pure and perfect when fresh, but soon becomes sour unless alcohol is added. In this simple way any essential perfume is readily obtainable, and people may thus make and enjoy the sweetness of their own flowers.

Another simple way of obtaining and fixing perfume from fresh flowers is to gather them dry when at their best and throw them into wide-mouthed bottle or jar half full of olive oil. If many mixed flowers are used the result will be a millefleurs, or mixed bouquet (*mélange*). After soaking about twenty-four hours take out the flowers and squeeze them into a horse-hair bag, letting the oil run back into the jar. Repeat this operation until the oil is saturated with perfume, when it can be mixed with an equal quantity of deodorised spirit or alcohol, and should be shaken up every day for a fortnight; after which the spirit may be poured off quite clear, and will be highly charged with perfume that was originally absorbed by the oil. Of course perfumes, like jams and preserves, can be bought cheaper than they can be made at home; still some may like to prepare their own supplies from their own garden all the same.

Another way is to extract the odours of scented petals by *effleurage*. The flowers are thrown into clean fat in shallow earthenware or glass vessels. Mix up the fat and the flowers and keep on adding flowers or scented petals from time to time, and when the fat has absorbed the perfume it may be dissolved out with pure alcohol, as in the case of the oil method.

Pretty Oriental jars with close-fitting covers may be three parts filled with dry fresh petals of Pinks, Cloves,



DATURA

Carnations, or Roses ; then add the rinds of two or three lemons (cut thin), an ounce of orris-root (powdered), half a pound or more of bay salt, one ounce of benzoin (powdered), ditto cinnamon, ditto cloves, ditto nutmeg (powdered), one grain of musk, ten or twelve sweet Bay leaves, and one ounce each of eau-de-Cologne, lavender-water, and Bergamot, with a few Sage leaves and Rosemary and Lavender cut small ; keep in pretty jars and add lavender-water if it becomes too dry.

THE HEALTHFULNESS OF SUNSHINE

It is really astonishing how few people there are who properly estimate the hygienic value of the sun's rays. A valuable lesson on this point may be learned by observing the lower animals, none of which ever neglect an opportunity to bask in the sun. And the nearer man approaches to his primitive condition the more he is inclined to follow the example of the animals. It is a natural instinct, which civilisation has partially destroyed in the human race. The effect of sunshine is not merely thermal ; its rays have chemical and electrical functions. It is more than possible that sunshine produces vibrations and changes of particles in the deeper tissues of the body as effective as those of electricity. Many know by experience that the relief it affords to wearing pain, neuralgic and inflammatory, is more effective and more lasting than that of any application whatever. Those who have faceache should prove it for themselves, sitting in a sunny window, where the warmth falls full on the cheek. For nervous disability and insomnia the treatment of all others is rest and sunshine.

A NICE PERFUME

It is not difficult to obtain a lasting and refreshing odour of sweet violets if the following directions be

carefully observed. Put $\frac{1}{2}$ half an ounce of orris-root, broken in small pieces, in a bottle with two ounces of alcohol; cork it tight and shake well. After four or five days a few drops on a handkerchief will recall the delicately scented violet.

TO DRIVE AWAY MOTHS

Moths form one of the veritable plagues of the housewife. A simple remedy and preventive is given in the shape of whole cloves, which are to be plentifully placed wherever the insects abound. Oil of cloves dropped on lint or wool has a like effect.

A B C LIST OF PERFUMES, ESSENTIAL OILS, ETC., AND PLANTS WHICH AFFORD THEM

“The breath of flowers is far sweeter upon the air where it comes and goes like the warbling of music than in the hand; therefore nothing is more fit for that delight than to know something of the flowers that do best perfume the air.”—*Lord Bacon*.

ACCORDING to Dr Piesse, the plants grown most extensively for perfume are Jasmine, Acacia, Roses, Bergamot, Orange, Violet, and the Tuberose.

This list does not profess to be complete, since nearly every plant that grows has odour or fragrance of some sort or other, however slight it may be. Even species and varieties of the same species vary very much in odour, as is abundantly proved by species of, say, Dendrobium, Reseda, or Diosma, and by varieties of H.P. or Tea-scented Roses, Apples, Pears, or Sweet Oranges, no two varieties smelling or tasting precisely alike. This is even true sometimes of individual fruits off the same tree. All that is here attempted is to give a bird's-eye view of the plants most generally grown for fragrance, and especially of those having sweet-scented leaves as well as flowers.

The growth or evolution of the perfumer's art began in Egypt and Greece, having probably come thence from the East. From Greece it naturally came to Rome, and thence to France long before it reached our own shores.

The master perfumers of Paris received a charter from Philip Augustus of France in 1190, but the trade scarcely began in England until the time of Elizabeth;

and even so late as 1860 there were only forty manufacturing perfumers in all England, while at the same date there were eighty in Paris alone. There does not appear ever to have been a perfumers' company in London. No such trade as that of a perfumer was known in Scotland until after the year 1763.

Acacia.—Shrubs or small trees mostly from Australia and North Africa. *A. farnesiana* is largely cultivated at Grasse for its flowers.

Achillea millefolium (Yarrow).—Aromatic herb, both foliage and roots being odorous.

Acorus calamus.—Sweet flag. Largely grown from time immemorial for its rhizomes in the East. It is cultivated in fen districts in England, on the Continent, and especially on the shores of the Black Sea.

Ajoman (*Ptychotis ajoman*).

Alliaceous odours.—Characteristic of Onions, Chives, Leeks, Garlic, etc. (*Liliaceæ*). As showing that taste and smell do not always agree, we may instance that the taste or flavour of Onions, etc., is enjoyed by many who detest the smell of them. (Shakespeare, "Midsummer Night's Dream," iv. 2.)

Allspice (*Pimento officinalis*).

Aloysia citriodora.—Lemon-scented Verbena, a well-known shrub from Chili, deservedly much grown in gardens, and hardy in warm and sheltered corners near walls and plant-houses. Its leaves retain their odour when dried, and are in Spain often placed in the teapot to add their aroma to the tea.

Andropogon citratus.—Lemon-grass. This and several other species are grown or collected in India, Ceylon, etc., and the essential oil they produce is known as "Indian Geranium" oil. It is grown as a stove plant, and its leaves when fresh are used for flavouring confectionery.

Angelica archangelica (*A. officinalis*).—A tall herbaceous

plant (*Umbelliferae*) the fleshy stems of which are very aromatic, and are candied or preserved in syrup and used in confections. Oil of Angelica is used in Chartreuse and other liqueurs.

Angostura (*Galipea cusparia*).—Used as a tonic stimulant.

Anise (*Pimpinella anisatum*). Used in liqueurs and cordials.

Anise, star. (*Illicium anisatum*.)

Anthemis nobilis (Chamomile).—A dwarf evergreen composite plant, grown for its single, or double, daisy-like flowers, which are used medicinally.

Anthoxanthum odoratum (Sweet Vernal Grass).—This grass belongs to the Coumarin series of perfumes, and gives its peculiar fragrance to the hay crop. The essential oil is used in perfuming cheap tobaccos, etc.

Artabotrys (*Artabotrys odoratissima*).—A flowering shrub having warm aromatic leaves and very sweet apple-scented flowers, from which a perfume is derived. The leaves have been used in Java as antispasmodic in cholera, as also those of *Melaleuca minor*.

Artemisia Abrotanum (Lad's Love, or Old Man).—A well-known plant in most cottage gardens, having finely cut and agreeably aromatic leaves. *A. Absinthium* is "Wormwood," used in rustic medicine and in the manufacture of absinthe in France and Belgium.

Asperula odorata (Woodruff).—A little rubiaceous woodland plant having whorled leaves and white flowers, deliciously aromatic, somewhat like the "Sweet Vernal Grass," used fresh or dried in posies and bouquets, and sweet bags. The flowers infused in Rhine wine yield the "Maitrank" of Germany.

Azara microphylla.—An evergreen shrub or small tree from Chili bearing a profusion of greenish yellow flowers beneath its branchlets in March and April, and yielding a delicious perfume of vanilla.

56 BOOK OF THE SCENTED GARDEN

- Baldo (*Peumus fragrans*).—Somewhat like Sweet Gale (*Myrica Gale*).
- Balm (*Melissa officinalis*).
- Balm of Gilead (*Dracocephalum canariense*).
- Balsam of Mecca (*Balsamodendron opobalsamum*).—Aromatic gum resin, highly valued by the Arabs and Indian Mussulmans.
- Balsam of Peru (*Pereiræ myrospermum*).—A leguminous tree, native of Central America; but the balsam is now rarely obtained and little used. It was employed for chronic coughs, ulcers, and in the making of pastilles.
- Balsam of Tolu (*Myrospermum toluifera*).—Similar to the last and employed in same way, but now rare.
- Balsamita vulgaris* (Costmary or Alecost).—A hardy herbaceous plant from Italy having balmy or aromatic foliage.
- Barosma crenulata* (Buchu Leaves).—Evergreen shrubs from South Africa.
- Basil (*Ocimum basilicum* and other species).—Basil is a delicious pot-herb much used in the south of Europe. The malarial “fever plant” of Africa is *O. viride*, of which much has been made lately in the newspapers, owing to the erroneous supposition that its odour would banish mosquitoes.
- Bdellium (*Boswellia glabra*).—Also a gum resin from *Balsamodendron africanum* (African Bdellium). *Amyris bdellium* or *Balsamodendron roxburghii* is “Indian Bdellium.”
- Benzoin (*Styrax benzoin*).—Not to be confounded with *Laurus benzoin*. It is an aromatic gum resin, not much used except in incense. Native of Borneo and Indian islands. It is sometimes called “Gum Benjamin.” False Benzoin is obtained from two or three species of the genus *Terminalia*.
- Bergamot (*Monarda didyma*).

Birch Bark, as is well known to those who love books as well as flowers, gives its characteristic perfume to Russian leather.

Bitter Almond.—Yielded also by Cherry Laurel (*Cerasus lauro-cerasus*).

Bluebell (*Scilla nutans*).

Boronia megastigma.¹—Nearly all the species have aromatic leaves, but in the one named the brown and yellow-lined flowers are deliciously fragrant. It is a well-known Australian plant, largely grown now for its perfume both on the Continent as well as in English gardens.

Boswellia serrata (Frankincense or Gum Olibanum).—An Indian tree yielding an aromatic gum that is one of the principal ingredients in modern as of ancient incense.

Box Tree (*Buxus sempervirens*).—A well-known native evergreen tree which O. W. Holmes describes as “breathing the fragrance of eternity, for this is one of the odours which carry us out of time into the abysses of the unbeginning past.”

Buchu.—The leaves of *Barosma crenulata*.

Buxus sempervirens (see Box Tree).

Cajeput (*Melaleuca cajeputi* and *M. minor*) yields greenish aromatic essential oil, employed as an antispasmodic and stimulant. The leaves are used in China and Malaysia as a tonic in the form of a decoction.

Californian Bay.

Calycanthus floridus (Carolinian Allspice).—Young and fresh flowers, as also the bark, agreeably scented.

Camel Grass (*Andropogon lanigerum*).—Another scented grass allied to “Lemon Grass.”

Camphor (Kopher, H.).—*Dryobalanops camphora*, *D. aromatica*, and probably other species, forming large forest trees in Borneo and other Eastern islands,

¹ Some people cannot smell the odour of this plant.

where, as in China, Camphor-wood trunks and boxes are valued as resisting the termites, or "white ants."

Camphor is also obtained from *Laurus camphora*, a tree found wild in Formosa, and it also exists in the Common Rosemary (*Rosmarinus officinalis*). Antispasmodic.

Cananga odorata, "Chaulmangra oil," "Macasser oil," etc. *Camphora* (*Laurus*) *officinarum* (Chinese Camphor Tree).

The "incense tree" (*Canarium* sp.), from which is constantly exuding the gum which forms the chief ingredient in incense, is common enough in Uganda. In this part of Africa, when a house or room becomes musty, and it is desired to fumigate it and scent it pleasantly, the process is simple enough—a native servant is sent out, and at a very short distance from the house he is pretty certain to come across an incense tree, from which he scrapes off the exuded gum, and, returning, places it on heated charcoal, when an odour more agreeable than that of incense at once arises, and rapidly scents the whole house.

Canella (*Canella alba*) produces an aromatic bark.

Caraway (*Carum carui*).—Seeds used in confectionery, and yield aromatic essential oil.

Cardamon (*Elettaria cardamom*).—Seeds used as a stimulant, or to chew after smoking, or they yield an essential oil.

Carnation (*Dianthus caryophyllus*).

Carolinian Allspice (*Calycanthus floridus*).—Both dark and fresh flowers are agreeably fragrant, but the old and decaying flowers smell like sour beer.

Cassia Clove (*Dicypellium aromaticum*).—The sweet bark is used sparingly.

Cedar.—*Juniperus bermudiana* and various species of the genus *Cedrela*, of which cigar-boxes are often made. The timber of *Cedrus Libani*, "Cedar of Lebanon," is only of use for building cabinet-work or fuel.

Cedrela odorata (Barbadoes Cedar-tree; *C. sinensis* is Chinese Cedar Tree).

Cereus grandiflora (Night-scented Cactus).—Nearly all night blooming Cacti or Cerei are perfumed.

Chamomile (*Matricaria chamomila*).

Champac (*Mitchelia champaca*).—One of the sweetest and most highly prized of all the scented flowers of the East; in appearance like a small Magnolia.

Cheiranthus cheiri (Wallflower).—Grown by the acre in Cornwall and near all large towns for its fragrant flowers. Found on old walls, as at Conway, Nottingham, etc. Everywhere in Britain and Normandy it merits its popular name, and with Sweet Violas and Mignonette sweetens many a cottage garden. “Esmond’s mistress knew he would like to sleep in the little room he used to occupy; ’twas made ready for him, and wallflowers and sweet herbs set in the adjoining room.”—*Thackeray’s “Esmond.”*

Chrysanthemum indicum (Garden Chrysanthemum, Queen of Autumn).—Both flowers and foliage possess an aromatic Pyrethrum-like odour.

Cinnamon (*Cinnamomum zeylanicum*).—This aromatic tree produces bark of a highly aromatic character. This bark in a powdered state is often used as a condiment at meals and in cookery. Oil of Cinnamon is inimical to bacteria. *Cinnamomum cassia* is most aromatic.

Citrine odours.—Characteristic of aurantiaceous plants (Orange family), leaves, and rind of the fruit; also in *Aloysia citriodora* and in many Eucalyptus. Large quantities of Orange leaves as well as flowers and fruits are grown for the perfume industry in Italy, South France, and Spain.

Citrus aurantium (Orange), *C. limonum* (Lemon), and *C. limetta* (Lime Fruit), and many other varieties are largely grown for flavours and perfumes in South

Europe and North Africa, and in the East (see Bonavia, "Oranges and Lemons of India and Ceylon").

Clethra alnifolia (Mignonette Tree).—A large shrub or small tree from North America bearing very sweet flowers.

Clove (*Caryophyllus aromaticus*).—The young flower buds dried are the cloves of commerce, yielding a powerful and agreeable essential oil fatal to many putrescent bacilli.

Coffee.

Comptonia asplenifolia (Sweet Fern-bush).—Leaves smell like "Bog Myrtle."

Coriander (*Coriandrum sativum* and other species).

Cotton Lavender (see *Santolina*).

Coumarin.—Hayfield odour, given off by Sweet Vernal Grass and Woodruff (*Asperula odorata*), when partially dried.

Cratægus oxycantha (Hawthorn or Sweet May).

Crinum asiaticum and many other handsome fragrant species.

Cumin (*Cuminum cyminum*).

Curcuma zedoaria, *C. zerumbet*, and other species have very aromatic rhizomes, leaves and flowers, or seeds.

Cyclamen persicum.

Cyperus rotundus (Sweet Sedge) and other kinds have aromatic rhizomes or stems, tubers, etc.

Cytissus fragrans.

Datura (*Brugmansia*) *suaveolens*.—A well-known greenhouse shrub bearing large, pendent, bell-shaped flowers, very sweet at night.

Dianthus caryophyllus (Carnation, July or Gillieflower).—All the family of Pinks, Cloves, Carnations, etc., are most deliciously fragrant. "Sops in Wine" were Clove or Carnation blooms thrown into wine flagons for the sake of their rich aroma.

Dill (*Anethum graveolens*).



W. A. RICHARDSON ROSE ON COTTAGE IN SELWORTHY

Diosma ericoides and many other species have very aromatic foliage, and are well known greenhouse plants.

Dracæna (*Cordylina*) *fragrans* and other species.

Elemi (*Canarium commune*).

Elettaria cardamomum (*Cardamoms*).—A warm greenhouse plant resembling Ginger in habit, but hardier, and having richly aromatic foliage. It is a good room plant during the summer months, and is easily grown.

Escallonia macrantha (*Shelter Bush*).—With sticky, aromatic foliage. One of the best of all evergreen plants for shelter hedges in wind-swept localities.

Eucalyptus.—*Eucalyptus globulus*, *E. citriodora*, and many other (seventy to eighty) species. All the species are aromatic, and yield essential oils; but *E. citriodora* is one of the sweetest. *E. globulus* and others yield “Eucalyptol.”

Euryangium sumbul.—A strong-growing umbelliferous plant of Turkestan and North India used medicinally. The rhizome smells of angelica and musk.

Fennell.—*Fœniculum dulce*, *F. officiale*, etc.

Fragaria elatior (*Strawberry*).—The scent of dying Strawberry leaves in the early sunshine of a frosty morning is one of the rarest and most delicious of all the scents or perfumes of the garden.

Frangipani (*Plumiera rubra*, *P. allia*, *P. fragrantissima*, etc.).—Commonly planted on graves in Borneo and Malayan islands. The Italian scent named “Frangipani” is a powder, or sachet, made of equal proportions of all known spices mixed with orris-root and one per cent. of musk and civet. An alcoholic extract of this “pot-pourri” is the most enduring scent known.

Frankincense (*Olibanum*).—*Boswellia serrata*.

French Honeysuckle (*Hedysarum coronarium*).

Freesia refracta (*Freesias*).—All the Freesias emit a subtle and delicious perfume, although by some who are partially anosmic their odour cannot be detected.

Galangal (*Alpinia officinarum*).—A Ginger-like plant having aromatic rhizomes and seeds.

Galbanum (*Ferula galbaniflua*).—A gum resin resembling that of *F. narthex*, the source of *Asafœtida*.

Galipea odoratissima.—A Brazilian tree that yields the Angostura bark of commerce, sometimes used as a tonic bitter, especially in the colonies and abroad.

Gardenia (Cape Jasmines), *Gardenia florida*, and *G. radicans*.—Known as the “Cape Jasmine.” These shrubs have highly perfumed flowers, and yield by effleurance a delicious perfume.

Geranium (see *Pelargonium*).—Many species of Geranium and Erodium have scented foliage when touched or bruised.

Ginger (*Zingiber officinale*).—Much grown and largely used as a sweetmeat in China and the West Indian islands; also used in cordials and in cookery. For preserving in China species of *Alpinia* and *Hedychium* are often used.

Glechoma hederacea (Ground Ivy).—An aromatic creeping labiate with balmy odour, formerly infused in ale for its flavour.

Grains of Paradise (*Amomum melegueta*, *A. grana paradisi*, etc.) produce hot aromatic seeds in globose or triquetrous capsules. They are closely related to Ginger and Cardamoms. The seeds have a camphorated flavour, and have been illegally used in doctoring beer at the risk of a heavy penalty.

Ground Ivy (see *Glechoma*).

Guava (*Psidium guava*, *P. pomiferum*, *P. cattleyanum*) is the Chinese purple Guava, generally compounded into a delicious flavoured jelly or pomade.

Gum cistus, or **Ladanum** (*Cistus creticus*), and many other kinds, such as *C. ladaniferus*, of Spain and Portugal, yield an aromatic gum resin used in perfumery and fumigations by Oriental people.

Gymnema sylvestre.—This is an asclepiadaceous plant, leaves of which were sent to Kew from Madras. After chewing the leaves, neither sweet nor bitter substances can be distinguished in the mouth. Salts, acids, astringents, and aromatics are unaffected. Might be useful to chew before taking unpleasant medicines. (See *Gard. Chron.*, April 23, 1897, p. 550.)

Gymnema.—Might be utilised to mask the bitter taste of some medicines.

Gynocardia odorata, Sikkim and Khasia Hills. The seeds are a remedy prepared with clarified butter for skin diseases.

Hawthorn (*Crataegus oxycantha*).—A well-known native tree with fragrant, white clustered flowers. There are double, and rose, pink, and crimson forms.

Heart's Ease (see *Viola*).

Hedychium spicatum.—The dried roots or rhizomes are pounded and used in the form of incense, and also as a medicine in India.

Hedysarum coronarium (French Honeysuckle).—A crimson-flowered biennial plant well worth culture.

Heliotrope (*Heliotropium peruvianum*).—Well-known sweet-scented flowering shrubs from Peru. Their flowers are redolent of "cherry pie," and are used in Spanish confectionery, etc.

Henna (*Lawsonia inermis*).—Much used from Egypt eastward, and mentioned in Song of Solomon, say 1000 B.C. It is a dye tinting the nails red.

Hesperis matronalis (Sweet Rocket).

Honeysuckle (*Lonicera periclymenum*).—Native Woodbine.

Horehound (*Marrubium vulgare*).

Humea elegans.—A composite greenhouse plant, with leaves scented like Russian leather.

Hyacinth (*Hyacinthus orientalis*).—Well-known odorous flowers.

Iberis odorata (Sweet Candytuft).

Ilang-Ilang (see Ylang-Ylang) (Flower of Flowers).

Iris florentina (Orris-root).—The dried rhizomes of this and other species of German or Flag Iris are agreeably scented like violets, and form the basis of violet powders and other dry perfumes for pomanders, bags, or sachets, etc. Orris-root is largely cultivated, dried in the sun, and prepared in S. France and Italy.

Jasmine.—This is one of the most distinct of all natural odours, and the only one that cannot so far be made artificially, afforded by *Jasminum officinale* and other species grown all over tropical and temperate regions. In the East, Jasmine flowers are rolled up in the well-oiled hair of the women at night, so as to scent the hair and skin next day.

Jonesia (see Saraca).

Jonquil (*Narcissus jonquilla*) and various forms of *N. Tazetta*.—Much grown for perfume at Grasse, Cannes, and elsewhere along the Riviera.

Juglans regia (Walnut).—The agreeable fragrance of crushed walnut leaves is much enjoyed by most people, but so far as I am aware it has not gained the attention from perfumers that its distinctness would seem to deserve.

Juniper (*Juniperus*).

Lastræa montana, *L. æmula*, and other species are scented.

Lathyrus odoratus (Sweet Peas).—Well-known and exquisite annuals.

Laurelia aromatica (Sweet Laurelia).—A rare evergreen with fleshy and deliciously fragrant foliage, hardy only in very warm and sheltered localities. It grows 20 feet high in Co. Wicklow.

Laurus nobilis (Sweet Bay).—Foliage aromatic and much used for flavouring confectionery, figs, sardines, etc. *Laurus sassafras* is N. American "Spice Bush," having perfumed leaves and aromatic bark. The "Cherry Laurel" is *Cerasus lauro-cerasus*, and its

prussic acid like odorous leaves are now and then used in flavouring, also as insecticides.

Lavender (*Lavandula vera*, *L. spika*, *L. stachys*).—Very abundant as a wild plant in Spain, where it is called “Romero Santo.” Largely grown at Mitcham, Surrey, and elsewhere in England, the oil being exported and made into lavender-water, eau-de-Cologne, etc. M'Donald says the late Queen was very fond of lavender-water, and has it specially distilled for her, the essential oil of Lavender being infused in pure spirits of wine. Lavender is now largely cultivated in Australia and New Zealand.

Lawsonia inermis (see Henna).

Lign Aloes (*Aquilaria agallocha*).—Also known as “Wood Aloes.”

Lilac (*Syringa persica*).

Lilium candidum (White Lily).—This and many other species bear perfumed flowers, some, as *L. auratum*, being too strongly scented for indoor uses.

Lily of the Valley (*Convallaria majalis*).—One of the sweetest and most exquisite of all our native flowers. This plant is economically very valuable, crowns by the million being imported from Germany, France, and Holland every year. By storing in refrigerating chambers the growth may be retarded and brought into flower in about twenty days in a warm greenhouse. It can now be obtained in flower any day in the year.

Lindera sericea (see Benzoin).

Mace (see Myristica).

Magnolia (*Magnolia fœtida* and other species).—The Yulan or Water Lily Tree of China and Japan, *M. fuscata*, and others have highly perfumed flowers.

Malva moschata (Musk Mallow).

Marrubium vulgare (Horehound).—Aromatic herb used in cough lozenges and other confections.

Matricaria chamomila (Chamomile).—The flower-heads are used in medicinal stupes and infusions with advantage.

Matthioli bicornis (Night Scented Stock).

Meadow Sweet (*Spiræa ulmaria*).

Mentha various species (see Mint).—"Menthol" is a product of this genus.

Mignonette (*Reseda odorata*).—A sweet-scented annual from N. Africa, highly esteemed for its odour. There are many other species, but none so sweet as this.

Mimulus moschatus (Musk).—Well-known cottage garden and window herb.

Mint (*Mentha piperita*, etc.).—Much grown at Mitcham and elsewhere in S. England for distilling. (Black Mint is said to yield 30 lb., and white 20 lb. per acre.) "Pennyroyal" is *Mentha pulegium*, var. *gibraltarica*, a well-known diuretic; *Mentha odorata* is Bergamot Mint; *Monarda didyma* is Oswego Tea; Balm is *Melissa officinalis*; *Cedronella calamint* is Mountain Balm; Basil Balm or Basil Mint is *Melissa acinos*.

Monarda didyma (Bergamot, Oswego Tea).—N. America swamp plant, with an agreeable fragrance either fresh or dried.

Myrica Gale (Sweet Gale or Bog Myrtle).

Myristica officinalis (*M. moschata*).—A tropical tree yielding nutmegs and mace, well-known spices.

Myrrh (*Balsamodendron myrra*).—Gold, Frankincense, and Myrrh in silk bags are still presented at the offertory in the Chapel Royal, St James's Palace, on Twelfth Day, by two gentlemen of the Lord Chamberlain's Office, but formerly by the Sovereign in person.

Myrrhis odorata is a fragrant umbelliferous plant worthy of culture for its aromatic perfume when touched or bruised.

Myrtle (*Myrtus communis* and many other species).—Well-known aromatic shrubs, easily grown in green-houses or in sheltered warm localities out of doors.

Myrtus communis (Myrtle).—All the Myrtles and *Eugenia*s are aromatic shrubs.

Musk (*Mimulus moschatus* and *Delphinium brunonianum*).—Animal musk is from the musk deer, etc., and ambergris from a kind of whale.

Musk Mallow (*Malva moschata*).

Musk Seed is *Hibiscus abelmochus*, from Martinique, appearing very irregularly at the sales in London, and fetching 1s. 2d. to 2s. 6d. per lb.

Narcissus tazetta (Poet's Narcissus).—All very fragrant, and long valued for their perfume (see Jonquil). Many tons weight of Narcissus flowers, especially of the Italian and South of France "paper-white" (*N. papyraceus*) are imported to London and all large towns from November to January every year, and are so cheap as to be sold in the streets with violets at a penny a bunch. Hundreds of tons' weight of Daffodils and Narcissus are also sent to our markets from the Sicilly Islands and Cornwall between November and April every season.

Night Scented Stock (*Matthioli bicornis*, etc.).—Several kinds very sweet scented, mostly annual.

Nutmegs and Mace (*Myristica moschata*).—Nutmegs are well-known aromatic fruits grated as a spice. The mace, or arillus, is the inner coat of the nut beneath the orange outer husk, and is also very sweet and grateful as a spice.

Nymphæas (Water Lilies).—Some of these are deliciously sweet scented by day, and others by night, none more so than *N. stellata* and its varieties from African lakes and streams, and so well known from its constant appearance on illustrated papyri, and in carvings or frescoes in the great rock temples and tombs.

Olea fragrans.—Sweet white flowers, used in China for scenting tea, etc. (see *Osmanthus*).

Olibanum (*Boswellia serrata*).—Supposed to be the frankincense of the ancients.

Opoponax (*Opoponax chironium*).—From the South of Europe, in habit like a parsnip; 6 feet high; yields a fragrant gum resin, very aromatic, but now not much used.

Orchids.—A large number of tropical species are very fragrant, the white and green flowered kinds especially at night, others at different periods of the day. A good list is given in Donald M'Donald's "Sweet-Scented Flowers and Fragrant Leaves," pp. 85-90. Vanilla is the fruit pods of *Vanilla planifolia*, etc., used in flavouring chocolate and confectionery. Orchids rarely possess a perfume that is not also yielded by other flowers. *Anguloa clowesii* smells of Fenugreek; *Dendrobium macrophyllum* like Turkey Rhubarb; *Lycaste harrisoni* smells like roasted Apples; *Odontoglossum ræzlii* like Wild Field Rose (*R. arvensis*).

"The odours of Orchids are most diverse, varying even in the same species at different stages of its existence. Some have an especially delicious and almost overpowering fragrance, such as *Aërides odoratum* and *Lycaste aromatica*. Mr Bateman enumerates only a few of the various odours which they represent when he likens the scent of *Stanhopea grandiflora* to that of a chemist's shop, that of *Bulbophyllum cocoinum* to cocoanut milk, of *Oncidium ornithorhynchum* to fresh hay, of *Gongora galeata* to Wallflowers, of *Maxillaria atropurpurea* to Violets, of *Aërides odoratum* to pomatum, of *Epidendrum anisatum* to aniseed, of *E. umbellatum* to angelica, of *Maxillaria crassifolia* to noyau, of *Lycaste aromatica* to cinnamon, of *Gongora atropurpurea* to allspice, of *Burlingtonia* (*Rodriguezia*) *candida* to citron, of *Dendrobium moschatum* to musk, and of *Cynoches loddii*

gesii to honey. *Bulbophyllum beccari* and *Masdevallia vilifera* have a disgustingly fœtid odour. The odour of some—as of *Epidendrum nocturnum* and *Brassavola (nodosa) grandiflora*—is only perceptible at night. Among our British Orchids there are several—such as the Butterfly Orchis (*Habenaria bifolia* and *H. chlorantha*) and the Sweet-scented Orchis (*Gymnaderica conopsea*)—the fragrance of which is greatly intensified towards evening.

Some species give out different scents at different times, such as *Dendrobium nobile*, which smells like grass in the evening, like honey at noon, and has in the morning a faint odour of primroses; while some, such as one or two species of *Epidendrum*, are fragrant in the morning and scentless at night. In others the fragrance is perceptible only in the evening. Our common British Purple Orchis (*O. mascula*) is remarkably variable in this respect—while faintly fragrant during the day, it is at night often so unpleasant in odour as to be unbearable in a room; but this varies much in different specimens. This list does not comprise more than a small fraction of the number of Orchids which have powerful odours. Indeed, it might almost be said that scentless Orchids are the exception.”—“*Orchids, Their Culture and Management*,” *Watson & Chapman, new or 2nd edit., pp. 20, 21.*

Osmanthus (*Osmanthus fragrans*) and other species (see *Olea*).

Oswego Tea (*Monarda didyma*).

Pancratium (*Hymenocallis*) *fragrans* (Wedding Lilies) and other species.—Deliciously fragrant.

Patchouli (*Pogostemon patchouli*).—A low soft-leaved labiate shrub with scented leaves that were formerly used to scent the Indian shawls.

Pelargonium (Geranium).—Many species and varieties of

the Cape Pelargonia have sweet-scented foliage, and are much grown for the decoration of rooms and conservatories on that account. Their dried leaves are useful for pot-pourri, etc. A good list of the scented kinds may be found at p. 92 of M'Donald's book already cited (see Books). The late Duchess Hermione of Leinster grew many of these dainty and fragrant shrubs at Carton (Kildare), and they were much used there in her Grace's time for dressing-room posies.

Pergularia (*P. odoratissima*).—The flowers are deliciously fragrant and yield a choice perfume.

Philadelphus (Mock Orange, Syringa).—All the species and varieties bear sweet-scented flowers, similar to Orange blossoms in the bud state. The green leaves possess a flavour similar to that of Cucumber, and may be used sparingly in claret-cup as a substitute, if Cucumbers are not available.

Pimento, or All Spice Tree (*Pimento officinalis* and *P. acris*).—The last named being largely used in making West Indian Bay rum. In 1886 the exports of Pimento from Trinidad = £46,704, and in 1896 they had increased to £90,046. Little Dominica exports £4000 worth of Bay leaves and oil; Trinidad grows ten times the quantity, none being utilised for export.

Pinol, used with boiling water in bronchitis kettle for bronchial and chest troubles.

Pogostemon (see *patchouli*).

Polianthes tuberosa (Tuberose).—Largely grown in South France for perfume, native of India. The fading flowers, like those of *Tropaolum*, have been seen to emit flashes of light at night.

Primrose (*Primula acaulis*).—This genus of many species found nearly all over the world, contains many with delicate odours, but none more delicious than our Wild Primrose, Oxlip, and Cowslips of the meadows.



A SPRING BORDER

Rockets (*Hesperis matronalis*).—Well-known fragrant garden plants.

Rondoletia (*Rondoletia odorata*).

Rosaceous odours.—The Eastern attar or otto-of-roses is one of the most delicious and valuable of perfumes in its pure state, but it is often largely adulterated by the addition of Indian “Geranium” oil (*Andropogon*).

“The Savour of the roses swote
They smote right to the herte rote.”

—CHAUCER.

Rosemary (*Rosmarinus officinalis*).—A very similar oil is afforded by *Cedrela rosmarinus* of North China.

Roses.—An enormous genus, most of which produce deliciously perfumed flowers. Attar-de-Rose from Persia, Cashmir, Turkestan, etc., when pure is one of the choicest and rarest of perfumes. It is usually, however, adulterated with Lemon Grass oil (see M'Donald's book, pp. 104-22, for a full list of sweetest Roses, etc.).

Salvia rutilans (Pineapple Sage).—This is a fragrant greenhouse plant. *Salvia officinalis* is common “Garden Sage” used for flavouring.

Sambucus nigra (Common Elder).—The leaves have an odour that helps to keep away flies, especially if mixed with those of Tansy. Flowers sweet, used for Elder-flower water.

Sanitas.—In 1875 Mr C. T. Kingzett, after observing the excess of ozone and salubrity of the air near to Pine and Fir-tree plantations, and conceiving that this was in part due to their volatile oils producing peroxide of hydrogen and camphoric acid, formed these reagents by a process involving the decomposition of turpentine, and it was made and sold in 1877 under the above name.—The Sanitas Co., Ltd., Bethnel Green, E., produce many volatile medicants, such

as Sanitas oil for vaporising, compounded of pine oil and Eucalyptus.

Santel (*Santalum album*).—Indian sandal-wood, much used for cabinet-work and for burning in place of pastilles in India and the East. Said to be one of the ingredients used in making the “joss-sticks” of the Chinese.

Santolina chamaecyparissus (Lavender Cotton).—A woolly-leaved little shrub with aromatic leaves, useful for edgings or low fences. Grows well in hot and barren places. Sprigs of it are useful for mixing with dried Lavender to keep away moths.

Saraca indica (= *Jonesia asoca*).

Sassafras (*Sassafras officinale*).—This and one or two other species have aromatic bark and nuts or seeds which yield a scented oil.

Satureia officinalis (Savory).—Pot-herb.

Scilla nutans (Bluebell).

Souchet (*Cyperus* species).—The dried tubers are used.

C. longus is “English Galangale” (Gerard).

Spice Bush (*Oreodaphne californica*).—Volatile oil antiseptic for tumours, leaf used as a condiment.

Spikenard (*Nardostachys jatamansi*).—A dwarf Valerian having an aromatic root, found in North India, and long ago very highly prized. It is now supposed to be the “nard” or “nerd” of the Scriptures, and one of the ingredients in the alabaster-box of ointment used by Mary in anointing the feet of our Lord. “Ploughman’s Spikenard” is the root of *Inula conyza*, of which Ben Jonson asks: “Have you smelt the bud of the briar or the nard in the fire?”

Spiraea ulmaria (Meadow Sweet).—Leaves odorous and quite different from scent of the flowers.

Star Anise (*Illicium verum*).

Stephanotis (*Stephanotis floribunda*) (Climbing Tuberose).—A well-known stove-climbing shrub having clusters of tubular and highly perfumed flowers.

Stocks (*Matthioli incana*, *M. triste*, etc.).—Several kinds, both diurnal and nocturnal bloomers and highly perfumed.

Storax (*Styrax officinalis*).—This shrub is found in the Levant, but its balsamic resin is not now easily obtained. The storax now used is from *Liquidambar orientale*, found in Asia Minor. Used in perfumery and as an expectorant.

Sweet Bay (*Laurus nobilis*).—A well-known aromatic evergreen, bark, leaves, and fruits being very fragrant. Long grown in European gardens and often used for funeral wreaths.

Sweet flag (*Acorus calamus*).—Long used as a perfume plant. It was the common perfume of the Romans, but they prized more highly the Roses of Pæstum, Spikenard, Telinium, Medebathrum, Onegalum, Balm of Gilead, and Cinnamon.

Sweet-scented Golden Rod (*Solidago odora*).

Syringa persica, etc. (Lilac).—One of the sweetest of hardy garden shrubs. Forced Lilac is deliciously sweet.

Tansy (*Tanacetum vulgare*).—Fern-like foliage aromatically scented, and it is now and then used in order to try and keep flies out of rooms. Used also in cookery, Tansy puddings, etc.

Thyme (*Thymus vulgaris*).—A well-known garden herb and the source of "Thymol," etc. *T. citriodorus* is "Lemon Thyme." There are many species grown as rock plants, all more or less scented.

Toddalia (*Toddalia aculeata*).

Tonquin Beans = seeds of *Dipteryx odorata*, Willd., from Guiana.

Tuberose (*Polianthes tuberosa*).

Tussilago fragrans (Sweet Tussilage; Winter Heliotrope).—An Italian plant naturalised abundantly near Dublin and elsewhere, and flowering freely in January and

February, when roads and lanes are redolent with its Heliotrope-like perfume. It is a dreadful weed in many Irish gardens.

Valerian (*Valeriana wallichii*).—Now and then used as an aromatic, and in medicine more rarely as a stimulant and antispasmodic. The dried root of *Valeriana officinalis* is very attractive to cats, and is said to be employed by rat-catchers to decoy their victims to their traps. *V. celtica* has fragrant rhizomes used in toilet mysteries like Sumbul.

Vanilla (*Vanilla planifolia*, *V. aromatica*, and other species).—The fruits or beans are long and dark brown, or chocolate-coloured, and possess a very strong aroma, flavour, and perfume. The essential flavouring principle of Vanilla can now be made artificially from Pine-tree sawdust. Both the natural and the chemical products are used for flavouring chocolate and other sweetmeats. Vanilla is sometimes adulterated with Tonquin Bean extract.

Vegetable Wax or Candleberry (*Myrica cerifera*).—The fruits are coated with a waxy resin from which aromatic candles are, or were, formerly made in America.

Verbena officinalis (Vervain, Herb of Grace).

Vetiver (*Andropogon schenanthus*).—The oil of Andropogon is sometimes called “Indian Geranium” oil, having a citrine odour. Used to adulterate attar-de-rose and in the manufacture of cheap perfumes. Used in India for screens or “Cuscus tatties.”

Violet odours.—The well-known Sweet Violet (*Viola odorata*) in all its forms, also present in some Orchids and in “Orris” root (*Iris florentina* and other species). Violets and Iris are largely grown in Italy, Sicily, Sardinia, and South France for the perfume trade. All the race of Garden Violas or “Tufted Pansies” are sweet and exquisite garden flowers. “Violetta,” and

other of Dr Stuart's race of rayless Violas, are charmingly dwarf, dainty, and sweet-scented.

THE BEST SINGLE VARIETIES

- La France. The largest, darkest, and most prolific.
Princess of Wales (true). A stately Violet, with very long stems, rather paler than La France. One of the very best.
Luxonne. A flower of true Violet colour, immense size.
Comtesse E. du Tertre. Large flower, with splendid stems, similar to the last.
Admiral Avellan. A most distinct Violet of a reddish purple hue.
White Czar. The best single white.
Semperflorens. A small Violet, flowering almost the whole year through, and extremely fragrant.

DOUBLE VARIETIES

- Mrs J. J. Astor. Mauve and heliotrope, a most distinct Violet, and a great acquisition, with a decided heliotrope perfume.
Comte de Brazza. Pure white.
Lady Hume Campbell. A vigorous and prolific Violet blue and white.
Marie Louise. An old favourite, rich blue and white.
Coolcronan Hybrid. Perhaps the largest and most prolific of all double Violets, rather deep blue.
Cannell's Blue and White. Clear porcelain blue and white.
Duchess of Edinburgh. Pale sky blue. An improved De Parme.
Belle de Chatenay. Immense double white; late flowering.

Vitis riparia and other Wild Grape vines of North America have sweet-scented flowers.

Wallflower (*Cheiranthus cheiri*).—One of the hardiest and sweetest of all our native flowers.

Winter Green (*Gaultheria procumbens*); also from *Betula lenta*.

Winter Sweet (*Chimonanthus fragrans*).—Waxy yellow flowers with a spicy perfume produced in winter.

Wistaria sinensis (Chinese Wistaria, or Pergola Flower).—Drooping racemes of deliciously sweet purple or white Pea-like blossoms.

Woodruff (*Asperula odorata*).

Yarrow (*Achillea millefolium*).

Ylang - Ylang, *Ilang - Ilang* (*Cananga odorata*).—A tree growing in Java, Burma, etc., with very fragrant yellowish green flowers. The name literally means “flower of flowers,” and the extracted perfume is more valuable than attar-de-rose.

Zedoaria (*Curcuma*).—*C. zerumbet* and many other kinds.

A FEW BOOKS AND NOTES ON THE SUBJECTS OF PERFUMES, ETC.

- ? 1491 B.C. Exodus xxx. Also later, Song of Solomon v. 13, vi. 2. St Mark xiv. 3. St John xii. 3-5. Myrrh, Spices, Cinnamon, Cassia, Frankincense, Stacte, Onycta, and Galbanum came from India, Persia, and East Coast of Africa. There is no mention of Camphor, Cloves, Nutmegs, Betel Leaf, Cubebs, or Gamboge, which may show the trend of commerce in Bible times. The "precious ointment" of the Scriptures was a compound of Olive oil, Myrrh, Cassia, Cinnamon, and Sweet Calamus, etc. It was a sacred production, and could not be used for secular purposes. A precious ointment is still used for the Pope's Golden Rose. In the early Christian Church not only incense but the oil of the lamps, and even the wax of tapers, etc., were perfumed.
- 374-286 B.C. Theophrastus wrote a work on fragrant plants in which he says: "Perfumes are made from Roses, White Lilies, and Violets, some from stalks and some from roots."
- ? 200 B.C. Apollonius of Herophila, who wrote a treatise on perfumes alluded to by Pliny. "The Iris," says Apollonius, "is best at Elis and at Cyzicus; perfume from Roses is most excellent at Phasalis, Naples, and at Capua; that made from Crocus is in highest perfection at Soli in Cilicia and at Rhodes; the essence of Spikenard is best at Tanius; the extract of Vine leaves at Cyprus and at Adramythum; the best perfume from Marjoram and Apples comes from Cos;

Egypt bears the palm for essence of Cyprinus, and the next best is the Cyprian and the Phœnician, and after them comes the Sidonian. The perfume called Panatheniacum is made at Athens, and those called Metopian and Mendesian are prepared with the greatest skill in Egypt."

- 65 B.C. Horace was very fond of flowers and perfumes. In his ode celebrating the return of Augustus from Spain he bids the slaves set rarest perfumes, and especially desires the tuneful Næara to make haste and knot up her scented hair.
1250. The Doge of Venice, even so far back as the thirteenth century, "might receive no presents or gifts from any one, except offerings of rosewater, leaves, flowers, and sweet herbs. In the event of a marriage he might receive gifts of food only, and he had to exact an oath from the Dogaressa and all his children to observe this rule strictly."—*Venice*: "Story of the Nations" Series, p. 156. (1894.)
1527. Master Jerome Brunswick, "The Vertuose boke of Distillacyon of the waters of all manner of Herbes," folio, newly translated out of Duyche into Englysshe, by the printer Lawrence Andrew, London. This is a rare and curious book, and may be taken as one of the earliest of "still room" guides.
1568. Dodoens, R., "Florum et Coronarium odoratarumque nonnullarum herbarum historia." Remberto Dodonæo Mechliniensis Medico auctore. Antwerpia. Ex officina Christophori Plantini. 8vo. 1568.
1574. Cortese, Isabella; "Secreti di la Signora Isabella Cortese ne quali si contengono cose minerali medicinali artificiose e d'alchemiche e molte del arte Profumatoria appartenenti a ogni gran Signoria Venetia." 1574. 12mo.
- 1578-1580. Secretes of Alexis.—The Secretes of the reuerend Maister Alexis of Piemont, containyng

excellente remedies against diuerse diseases, woundes, and other accidentes, with the maner to make distillations, parfumes, Confitures, Diynges, Colours, Fusions, and Heleynges, a woorke well approued, verie profitable, and necessarie for every man, newlie corrected and amended, and also somewhat enlarged in certaine places, whiche wanted in the firste edition, translated out of Frenche into Englishe by Willyam Warde, four parts in one vol., Black Letter, small 4to.

1647. Markham Gervase, "The English Housewife," containing the inward and outward vertues which ought to be in a compleat woman, and it treats specially of "Conceited Secrets, distillations, and perfumes." Herein will be found good old recipes for "perfuming gloves and jerkins and for the making of perfumes to burn, for pomanders, and for sweet bagges, Damask water," etc.

1648. "The Country Housewife's Garden" on the division and husbandry of herbs, etc.

1661. Evelyn, John, "Fumifugium, or the Inconveniences of the air and smoke of London, dissipated." 4to.

"He proposed that all low ground circumjacent to the city, especially east and south-west, should be divided into square plots of from twenty to forty acres, separated from each other by plantations of fragrant shrubs, such as Sweetbriar, Jessamine, Syringa, Roses, and above all Rosemary," the flowers of which are credibly reported to give their scent above thirty leagues off at sea upon the coasts of Spain.

The space between these delicious hedgerows was to be filled with Pinks, Gillyflowers, Cowslips, Lilies, Musk, Thyme, and Marjoram, and all those blossoms "which upon the least cutting and pressure breathe out and betray their ravishing odours." By this means "the air perpetually fanned from so many encompassing hedges of fragrant shrubs . . . the whole city

would be sensible of the sweet varieties of the perfumes as well as of the most delightful and pleasant places of recreation for the inhabitants. A diversion might thus be yielded inferior to none that can be imagined for health, profit, and beauty, "and those that walk and converse in London," instead of being "pursued and haunted by that infernal smook," might dream themselves transferred "as if by a certain charm or innocent Magick" to that part of Arabia which "is therefore styled the Happy because it is among the gums and precious spices."

The new electric cure for fog and dust brought forward lately by Prof. Oliver Lodge seems to bring the fog and smoke question within practical limits. It appears to be a mere question of sufficient elevation and voltage so as to polarise and precipitate the watery and other impurities in the air. London has always been a city of green grass, trees, and flowers, but if the fog and smoke demon can be banished it may become more of "a garden city" than ever.

1680-90. Temple, Sir William, "Essay on Health and Long Life," says: "Fumigation or the use of scents is not practised in modern physic, but might be carried out with advantage, seeing that some smells are so depressing, or poisonous, and others so inspiriting and reviving." Walking in the India House at Amsterdam, where Cloves, Nutmegs, Mace, etc., were kept in great quantities, he was so revived by their aromatic fragrance that both he, and those with him, were much exalted in health and in humour.

1740. Albrecht, B. G. "De aromatum exoticorum noxa et nostratium prestantia." 4to. Erfordiæ.

1774. Perfumes, etc.: "Nouvelle Chymie du Gout et de l'Odorat, ou l'Art de Composer facilement et a peu de frais les Liqueurs à Boire, et des Eaux de Senteurs," engravings, 8vo. Paris.



DAY LILIES

BOOKS AND NOTES ON PERFUMES 81

1784. Cosmetics.—Toilet of Flora, a collection of simple and approved methods of preparing baths, pomatums, perfumes, etc., sm. 8vo.
1800. Buc'hoz, J. P., "Manuel cosmétique et odoriférant des plantes." 4to. Paris.
1801. "La Toilette de Flore." Buc'hoz' Manuel with different title.
1818. Kitchener, "The Cook's Oracle," 2nd edition. Contains much information as to sweet and savoury herbs, etc., used in cooking.
1822. An old English work on perfumes by the once noted Charles Lilly was edited by Colvin Mackenzie. Lilly, or Lillie, was a practical perfumer, and had a shop at the corner of Beaufort Buildings, Strand, where Rimmel's now stands, and he is constantly alluded to in the *Spectator*, *Tatler*, *Guardian*, etc., of his day.
1833. Stark, James, M.D., "On the Influence of Colour on Heat and Odours." Phil. Trans. Showing that the same materials of different colours possessed varying degrees of attraction for both heat and moisture, also for odour such as camphor, etc.
1834. Bulwer Lytton. See the "Last Days of Pompeii," wherein the profuse luxury of perfumes is frequently alluded to; oil for lamps and wax for candles were scented.
1838. Lindley, John, Ph.D., "Flora Medica," a botanical account of all the more important plants used in medicine in different parts of the world. London: Longmans & Co.
1842. Calcott, Maria, "The Flowers and Plants of Scripture" (London: Longmans & Co.), with wood-cut illustrations drawn by the authoress. A very interesting book, in which all her authorities are scrupulously given.
1842. *Quarterly* for June contains a quotation of an olitory or herb-garden.

1843. Mott, F. T., "Flora Odorata," a characteristic arrangement of the sweet-scented flowers and shrubs cultivated. London, 8vo. This is one of the early modern works on scented flowers, and none of the later authors have a good word for it; but its insufficiency led M'Donald on to better things.
1853. Lindley, John, Ph.D., "The Vegetable Kingdom; or, the Structure, Classification, and Uses of Plants." 3rd edition, 8vo. London: Bradbury & Evans.
1854. Celnart, "Nouveau Manuel Complet de Parfumeur." 18mo. Paris.
- 1854-57. Pereira, "Elements of Materia Medica." 8vo, 2 vols. London.
1855. Bain, Dr Alexander. Treatises on "The Senses and the Intellect," etc.
1865. Rimmel, E., "The Commercial Use of Flowers and Plants." 8vo. London.
1868. Silva Contino, "Gommes, Résines, et Gommés-résines." 8vo. Paris.
1870. Perfumes—Rimmel (Eugene), "Le livre des Parfums; preface d'Alphonse Karr"; with 12 beautifully coloured plates and numerous illustrations, 8vo.
1873. "Perfumes, Cosmetics, and other Toilet Articles, Handbook of, with a collection of Formulæ and directions for their preparation," by Arnold J. Cooley; post 8vo.
1874. Hanbury & Fluckiger's "Pharmacographia," a well-known standard work on plants yielding perfumes, spices, gums, resins, and essential oils generally.
- 1875-80. Trimen & Bentley, "Medicinal Plants," good figures by D. Blair. A standard book.
1877. Barton & Castle, "The British Flora Medica," a new edition by John R. Jackson, A.L.S. London: Chatto & Windus.

BOOKS AND NOTES ON PERFUMES 83

1877. Flückiger, Prof., of Strasburg, "An Easter holiday in Liguria, with an account of the garden of the Palazzo Orenco, at Mortola." Contains much about the oils and perfumes of the Riviera.
1879. Piesse, G. W. Septimus, Ph.D., F.C.S. 4th edition. London: Longmans, Green & Co. "The Art of Perfumery," and the methods of obtaining the odours of plants, the growth and general flower-farm system of raising fragrant herbs, with instructions for the manufacture of perfumes for the handkerchief, scented powders, odorous vinegars and salts, snuff, dentifrices, cosmetics, perfumed soap, etc., to which is added an appendix on preparing artificial fruit essences, etc.
1879. Macmillan, Rev. Hugh, "The Ministry of Nature." New Edition, pp. 24-47. Article "Fragrance."
1880. Mr Dillon and Miss Lambert in *Nineteenth Century*, attribute early use of odours and sweet savour to religious rites and offerings.
1881. Hope, Francis J., "Notes and Thoughts on Gardens and Woodlands," written chiefly for amateurs. 8vo. London: Macmillan. A charmingly fresh and practical book containing articles on "Sweet-scented Greenhouse Plants," "Flowers for the Poor and the Sick," and a remarkable one on "Flowers for the Blind." It is a work not sufficiently known.
1881. Books on Medicinal Plants. See Daydon Jackson's "Guide to the Literature of Botany," pp. 199 *et seq.*
1883. Grindon, Leo H., "The Shakespere Flora." Manchester: Palmer & Howe. London: Simpkin & Marshall. 8vo. A very interesting book. See page 201 for chapter on "Odoriferous and Medicinal Herbs," etc.
1885. "Bible Flowers and Folklore," London: Hodder

& Stoughton, 8vo, is another very interesting little work on the fragrant vegetation of the Scriptures.

1885. Gilman, Arthur, M.A., "Rome: Story of the Nation" Series, p. 18. London: T. Fisher Unwin.
 "On April 21, 753 B.C., we are told the shepherds began to build the city of Rome, and a feast of purification was begun. Towards evening the flocks and herds were fed and the stables sprinkled with water from laurel brooms; sulphur incense, rosemary, and fir-wood were burned, and the smoke was made to pass through the stalls to purify them, and even the flocks themselves were made to pass through the same cleansing fumes."
1889. Blondel, R., "Les produits odorants des rosiers," pp. 165, 1 plate.
1889. Blondel, R., "Parfum et mode de reproduction chez des roses," pp. 7.
1889. Boulger, G.S., F.L.S., "The Uses of Plants: a Manual of Economic Botany." London: Roper & Drowley.
1889. Lindley & Moore, "The Treasury of Botany: a Popular Dictionary of the Vegetable Kingdom." This cheap and handy work is almost indispensable to gardeners, and ought to be better known. 2 vols. London: Longmans, Green & Co.
1890. Jackson, John R., A.L.S., "Commercial Botany of the Nineteenth Century." London: Cassell & Co.
1892. Leonard & Christy, "Dictionary of Materia Medica and Therapeutics." London: Ballière, Tindall & Cox, King William Street, Strand, W.C.
1892. Sawyer, Ch. J., "Odorographia." 2 vols. London: Gurney & Jackson, 1 Paternoster Row. The author is still engaged on the subject, and hopes to publish a third volume. This work may be considered the most modern and reliable work on perfumes, and one

to which I am largely indebted in the preparation of this book.

1893. Schimmel & Co., Leipzig, "List of Essential Oils, Organic and Synthetic Products." A very handy pamphlet enumerating about one hundred and fifty essential oils and about fifty organic and synthetic products, showing what parts of the plant yield the oils, and the main constituents of the products derived from the oils, and their chemical composition. 8vo. Leipzig: Frederick Groher.
1894. *Nineteenth Century*, April number, in a paper on "A Neglected Sense"—the sense of smell—describes the Japanese scent game elsewhere alluded to.
1895. "History of Gardening in England." Miss A. Amherst describes the monastery gardens and infirmaries, gardens in which herbs for food and herbs for healing were grown.
1895. M'Donald, Donald, "Sweet-scented Flowers and Fragrant Leaves." Being interesting associations gathered from many sources, with notes on their history and utility. With an introduction by W. Robinson, and 16 coloured plates. This is a charming little book on the subject, and contains a very full list of perfumed or scented plants for the garden. There are good lists of Scented-leaved Geraniums (*Pelargonias*), Roses, and Orchids. The introduction alone is well worth the price of the book, being a nervous and well-studied bit of prose by a past master in fragrant plants and gardens beautiful.
1896. Ellacombe, Henry N. Canon, etc., "The Plant Lore and Garden Craft of Shakespeare." New edition, illustrated. London and New York: Edwin Arnold. One of the very best of the many works dealing with the plants of Shakespeare's time, and full of interest to all garden lovers.
1896. *Edinburgh Review*. July-October. Vol. 184, pp.

- 161-84. Essay on some of the influences that have determined the development of gardens in Great Britain during the past thousand years or so, and more particularly as showing the far-reaching effect of Italian influence as effected by the gardens at Rome.
1897. Earle, Mrs. C. W., "Pot-pourri from a Surrey Garden." London: Smith, Elder & Co. This is a charming book, with original notes on gardening, etc. On p. 8 the authoress says: "On the backs of my armchairs are thin liberty silk oblong bags, like miniature saddle-bags, filled with dried lavender, sweet verbenas, and sweet geranium leaves. This mixture is much more fragrant than the lavender alone. The visitor who leans back in his chair wonders from where the sweet scent comes."
1897. Sternberg. "Text-book of Bacteriology." See pp. 199, etc., for records of experiments with essential oils, etc., and bacilli.
1897. Grant Allan, "Physiological Æsthetics," p. 77.
1897. Richard Jeffries (cheap reprint). In this charming work entitled "Nature near London," he describes Kew Gardens as being a great green book, whose broad pages are illuminated with real flowers, which ever lies spread open at the feet of Londoners. The chapter on "Herbs" in this book is well worth reading, but the whole contents are delightful.
- Those especially interested in pickling, bottling, distilling, etc., will find much information in vol. v. of "The Country Handbooks," viz., "The Still Room," by Mrs Charles Roundell.
1901. "The Book of Old Fashioned Flowers," by Harry Roberts (John Lane, 1901). Contains much lore on sweet or scented garden plants and flowers. Chapters on "A Garden by the Sea," p. 13, and "Night in the Garden," p. 62, are especially interesting.

1901. Milne Home, "Stray Leaves from a Border Garden" is a charming book on the fragrant and beautiful old flowers in a northern garden, with their Scottish local names.
- 1903 "The Book of Herbs," by Lady Rosalind Northcote, is also a mine of pleasant information as to the use of herbs for scent, flavour, food, or medicine.
1884. Ewing, J. H., Mrs, "Mary's Meadow," a charming book for children, containing much information about Gardens and Gardening.

CHEMISTRY OF ODOURS

THOSE interested in the chemistry of perfumes should consult the journals published by the Pharmaceutical and Chemical Societies of England, France, Italy, Spain, and Germany, especially the last named, as a considerable part of the trade in essential oils and perfumes is now in the hands of German specialists. For statistics, imports, exports, etc., see the "Board of Trade Returns."

Dugald Stewart, see "Works," vol. iv. p. 300, for remarkable case of James Mitchell.

"Encyclopædia Britannica," 9th or last edition, see articles on Perfumes, Scent, Spices, Incense, Condiments, Smell, etc. "Chambers's Encyclopædia" also contains much interesting information under above heads.

Franck, François, "Olfaction," Dict. Ency. des Sciences médicales, 2nd series, contains a full history of the sense of smell.

1804-54. Kitto, Dr John, "Cyclopædia of Biblical Literature," see Perfume, Ointment, Balm, Balsam, Spice, etc.

Owen's "Comparative Anatomy and Physiology of Vertebrates."

Ramsay, Dr. William, "Essay on Smell and Chemical Constituents affecting Nerve Centres of the Nose," etc. (*vide* "Nature," vol. xxvi. p. 187).

Vintschgau, Prof. V., "Hermann's Handbuch der Physiologie d. Sinnesorgane," zweiter Theil, "Geruchsinne," pp. 226, etc.

Since the above paper was written Professor Ayrton, President of the Physical Science Section, read a most

interesting paper on the sense of smell at the British Association meeting at Bristol, September 1898.

1899. Ernest T. Parry, B.Sc., "The Chemistry of Essential Oils and Artificial Perfumes." London: Scott, Greenwood & Co.

The industry of essential oils is already of very great importance, and it is probable that we have valuable minor industries still in store based upon the production of medicinal and perfume oils. Mr Parry is the leading chemical authority on essential oils in England, and he has presented in this book precise and detailed information of great value to all interested in his subject.

This volume is of peculiar interest and merit in that it gives full technical information upon a subject that has hitherto been almost a *terra incognita* to the average chemist.

The chemical composition, preparation, and analysis of the essential oils are first given, and this is followed by a systematic study of individual oils containing much information of general and commercial interest. The chemistry of artificial perfumes—the bugbear of all agricultural enterprise in essential oils—is dealt with in a closing chapter, while a table in the appendix gives a tabulated summary of the "constants" of all the chief products.

LIST OF PLANTS REPRESENTED AT THE ROYAL HORTICULTURAL SOCIETY'S MEETING, APRIL 26, 1898

To illustrate Mr Burbidge's lecture the under-mentioned specimens were kindly sent by—(1) Leopold de Rothschild, Esq., Gunnersbury House, Acton (gardener, Mr Hudson); (2) Earl of Annesley, Castlewellan, Co. Down, Ireland (gardener, Mr T. Ryan); (3) The Director, Royal Gardens, Kew; (4) Messrs. Jas. Veitch, Chelsea; (5) R. J. Lynch, Esq., Botanic Garden, Cambridge; (6) Trinity College Botanic Gardens, Dublin :—

<i>Adenandra fragrans.</i>	<i>C. zeylanicum.</i>
<i>Agathosma rugosa.</i>	<i>Citrus aurantium.</i>
<i>Aloysia citriodora.</i>	<i>Citrus trifoliata.</i>
<i>Anomum cardamomum.</i>	<i>Cupressus macrocarpa.</i>
<i>Artemisia abrotanum.</i>	<i>Diosma capitata.</i>
<i>A. absinthium.</i>	<i>D. ericoides.</i>
<i>Azolla filiculoides.</i>	<i>D. gracilis.</i>
<i>Barosma fœtidissima.</i>	<i>D. var.</i>
<i>Boronia tetrandra.</i>	<i>Drimys aromatica.</i>
<i>Bupleurum fruticosum.</i>	<i>D. winteri.</i>
<i>Buxus arborescens.</i>	<i>Eucalyptus coccifera.</i>
<i>Calycanthus floridus.</i>	<i>E. citriodorus.</i>
<i>Camphorum officinarum.</i>	<i>E. gunni.</i>
<i>Chenopodium anthelminticum.</i>	<i>E. globulus.</i>
<i>Choisya ternata.</i>	<i>E. hæmastoma.</i>
<i>Chrysanthemum maximum.</i>	<i>E. rostrata.</i>
<i>Cinnamomum sericeum.</i>	<i>E. viminalis</i>

<i>Ferula communis.</i>	<i>P. Pheasant's Foot.</i>
<i>Habrothamnus newelli.</i>	<i>P. Prince of Orange.</i>
<i>Humea elegans.</i>	<i>P. quercifolium.</i>
<i>Hypericum prolificum.</i>	<i>P. radula major.</i>
<i>Illicium verum.</i>	<i>Pelargonium tomentosum.</i>
<i>Isatis tinctorium.</i>	<i>Phlomis fruticosa.</i>
<i>Juniperus sabina.</i>	<i>Phygeliu capensis.</i>
<i>Laurelia aromatica.</i>	<i>Pimenta officinalis.</i>
<i>Laurus nobilis.</i>	<i>P. acris.</i>
<i>Lantana, seedling.</i>	<i>Piptanthus nepalensis.</i>
<i>Lastrea fragrans.</i>	<i>Pogostemon patchouly.</i>
<i>Lavendula spica.</i>	<i>Prostranthera lasianthos.</i>
<i>L. vera.</i>	<i>Psorala glandulosa.</i>
<i>Ledum palustre.</i>	<i>Rhopala corcovadensis.</i>
<i>Mentha gibraltarica.</i>	<i>Rosa rubiginosa.</i>
<i>M. viridis.</i>	<i>Rosmarinus officinalis.</i>
<i>Myrica cerifera.</i>	<i>Ruta graveolens.</i>
<i>M. gale.</i>	<i>Salvia officinalis.</i>
<i>Myrtus communis.</i>	<i>Salvia rutilans.</i>
<i>Nuttallia cerasiformis.</i>	<i>Santolina incana.</i>
<i>Olearia argyrophylla.</i>	<i>Skimmia laureola.</i>
<i>Ozothamnus rosmarinifolius.</i>	<i>Solanum crispum.</i>
<i>Pelargonium, Apple-scented.</i>	<i>Tanacetum vulgare.</i>
<i>P. capitatum.</i>	<i>Thuja lobbi.</i>
<i>P. crispum.</i>	<i>T. L. atrovirens.</i>
<i>P. Fair Helen.</i>	<i>T. vervaneana.</i>
<i>P. fragrans.</i>	<i>Thymus citriodora aurea.</i>
<i>P. Lady Mary.</i>	<i>T. c. argentea elegantissima.</i>
<i>P. Lady Plymouth.</i>	<i>T. vulgaris.</i>
<i>P. Lade Scarborough.</i>	<i>Umbellularia californica.</i>
<i>P. Little Gem.</i>	<i>Valeriana officinalis.</i>
<i>P. odoratissimum lobatum.</i>	

"Sweets to the Sweet ; Farewell,"—*Shakespeare.*

INDEX

ACACIA (Mimosa), 54.
 Achillea, 54.
 Acorus, 54.
 Ajoman (Ptychotis), 54.
 Ale-Cost, 56.
 Alliaceous odours, 54.
 Allspice, Carolinian, 57.
 Allspice (Pimento), 54.
 Almond, Bitter, 57.
 Aloysia Citriodora, 54.
 Andropogon (Lemon Grass), 54.
 Angelica, 54.
 Angostura, 55, 62.
 Anise, 55.
 — Star, 55.
 Anthemis (Chamomile), 55.
 Artabotrys, 55.
 Artemisia, 55.
 Azara, Vanilla Bush, 55.

BACTERIA and essential oils, 11
 Bacteria, as aroma and flavour producers, 23.
 Baldo, 56.
 Balm, 55.
 — of Gilead, 55.
 Balsam of Mecca, 56.
 — of Peru, 56.
 — of Tolu, 56.
 Balsamita, 56.
 Basil, 56.
 Bay, Californian, 57.
 Bay rum, 70.
 Bay, Sweet, 64.
 Bdelium, 56.
 — African, 56.
 — Indian, 56.
 Beans, Tonquin, 73.
 Bee, scent organ in, 23.

Benzoin, 56.
 — False, 56.
 Bergamot, 56-66.
 Birch Bark, 57.
 Bluebell, 57.
 Bog Myrtle, 66.
 Books and notes on perfumes, 77 *et seq.*
 Boronia, 57.
 Boswellia, 57.
 Box tree, 57.
 Buchu, 56, 57.
 Brocade, The Old, a poem, 30
 CAJEPUT, 57.
 Camel Grass, 57.
 Camphor, Barneau, 57.
 — Formosa, 58.
 Cananga, 58.
 Candleberry, 74.
 Candytuft, 63.
 Canella, 58.
 Caraway, 58.
 Cardamon, 58.
 Carnation, 58.
 Carolinian Allspice, 57, 58.
 Cassia, Clove, 58.
 Cedar, 58.
 Cedrela, 59.
 Cereus, 59.
 Chamomile, 55, 59.
 Champac, 59.
 Chartreuse, 54.
 Cheiranthus (Wallflower), 59.
 Chemistry of odours, 87.
 Chemistry of vegetable perfumes, 87.
 Cherry Laurel, 64
 Chronology, of perfumes, 77

Chrysanthemum, 59.
 Cinnamon, 59.
 Citrine, or Lemon odours, 59.
 Citrus family, 59.
 Clove, Cassia, 58.
 — (Caryophyllus), 60.
 Coffee, 60.
 Colour and scent experts, 37.
 Coriander, 60.
 Costmary, 56.
 Cotton Lavender, 60.
 Coumarin, 60.
 Cratægus, 63.
 Crinum, 60.
 Cumin, 60.
 Curcuma, 60.
 Cyclamen, 60.
 Cyperus, 60.
 Cytissus, 60.

DATURA, 60.
 Dianthus, 60.
 Dill, 60.
 Diosma, 61.
 Dracæna, 61.

EFFLEURAGE, 50
 Elder (Sambucus), 71.
 Elemi, 61.
 Elettaria, 61.
 Escallonia, 61.
 Essential oils *v.* bacteria, 11.
 — as antiseptics, 12.
 Essential oil in fodder crops, 23.
 Eucalyptus, 61.
 Euryangium, 61.

FENNELL, 61.
 Fern bush, 60.
 Ferns, Sweet Scented, 64.
 Fever plant, 56.
 Flowers, perfumes of, 27.
 Fragaria, 61.
 Frangipani, 61.
 Frankincense, 57-61.
 Freesia, 61.
 French Honeysuckle, 63.

GALANGAL, 62.
 Galbanum, 62.
 Galipea, 62.
 Gardens, enclosed, 17.
 Gardenia, 62.
 Geranium, 62.
 Ginger, 62.
 Golden Rod, Scented, 73.
 Grains of Paradise, 62.
 Grass, Camel, 59.
 Ground Ivy, 62.
 Guava, 62.
 Gum Albanum, 57.
 Gum-cistus, 62.
 Gynema, 63.

HAWTHORN, 60.
 Hawthorn (Cratægus), 63.
 Hearing or sound, 10.
 Heart's Ease (Viola), 63.
 Hedychium, 63.
 Hedysarum, 63.
 Heliotrope, 63.
 Henna, 63.
 Herb of Grace, 74.
 Honeysuckle, 63.
 Honeysuckle, French, 61, 63.
 Horehound, 63.
 Humea, 63.
 Hyacinth, 63.
 Hyperosmic skill of experts, 35.

ILANG-ILANG, 64.
 Illicium, 72.
 Incense tree, 58.
 Insects and bacteria, 23.
 Iris (Orris Root), 64.
 Ivy ground, 62.

JASMINE, 64.
 Jasmine, Cape, 62.
 Jonesia (Saraca), 64, 72.
 Jonquil, 64.
 Juniper, 64.

LAD's Love, 55.
 Lastræa, Scented, 64.
 Laurelia, Sweet or Aromatic, 64.

- Laurus (Sweet Bay), 64.
 Lavender, 65.
 Lawsonia (Henna), 65.
 Leaves as chemists, 2, 15.
 Leaves, fragrant, 2.
 Leaves, what they do, 2.
 Lemon Grass (Andropogon), 54.
 Lemon, lime and orange family, 59, 60.
 Lemon Thyme, 73.
 Lign Aloes, 65.
 Lilac, 65.
 Liliun, 65.
 Lily of the Valley, 65.
 Lily White, 65.
 Lindera (Benzoin), 65.

 MACE (Myristica), 65.
 Mace and Nutmegs, 67.
 Magnolia, 65.
 Maitrank, 55.
 Malva, 65.
 Marrubium (Horehound), 65.
 Matricaria (Chamomile), 66.
 Matthioli, 66.
 May Blossom, 60.
 Meadow Sweet (Spiræa), 66, 72.
 Medicines in China, 31.
 Memory and perfumes, 30.
 Mentha, 66.
 Micro-tasimeter, the, 10, 38.
 Mignonette, 66.
 — tree, 60.
 Mimulus (Musk), 66.
 Mint, 66.
 Moths, to drive away, 52.
 Musk Mallow, 65, 67.
 — plant, 66.
 — seed, 67.
 Myrica (Sweet Gale), 66.
 Myristica (Nutmeg Tree), 66.
 Myrrh, 66.
 Myrrhis, 66.
 Myrtle, Bog, 66.
 — Sweet, 67.

 NARCISSUS, 67.
 Night-scented Stock, 66, 67.

 Noses, educated, 35.
 Notes and Books on Perfumes, 77
 et seq.
 — on Perfumes, 77.
 Nutmeg (Myristica), 65, 66.
 Nutmegs and Mace, 67.
 Nymphæas, 67.

 ODOURS, Alliaceous, 54.
 — Antiseptic, 40.
 Odour, an experiment on, 27.
 — and the imagination, 27.
 — what is it? 27.
 Odours, chemistry of, 87
 — floral evanescent, 39.
 — leafy permanent, 39.
 — leafy v. floral, 32.
 Odour, neglect of, 38.
 — study of vegetable, 40.
 Odours, Smee's plan of condensing, 49.
 Oils essential, etc., 53, 76.
 Old Man, 55.
 Olea, 68.
 Olibanum, 68.
 Opoponax, 68.
 Orange family, 59.
 Orchids, 68, 69.
 Oriental Sweet Jars, 50.
 Orris-root (Iris), 64.
 Osmanthus, 69.
 Oswego Tea, 66.
 Oxlips, 70.

 PALIANTHES (Tuberoſe), 70.
 Pancratium, 69.
 Paradise, grains of, 62.
 Patchouli, 69.
 Pea, Sweet, 64.
 Pelargonium, 69.
 Peppermint, 66.
 Perfumes, artificial, 12.
 — chemical, 12.
 — for burning, 42.
 — healthy or injurious, 33.
 Perfume, a nice, 51.
 — Plants, A B C list of, 53-76.
 — what is it? 27.

- Perfume and temperature, 41.
 Perfumes, flowers most grown for,
 53.
 — and memory, 30.
 — and music, 34.
 — and singers, 29.
 — mixed, bouquets or blends,
 34.
 Pergularia, 70.
 Persons, anosmic, 34.
 — hyperosmic, 34.
 Philadelphus, 70.
 Pinol (Oil of Pinus), 70.
 Pimento (Allspice Tree), 54, 70.
 Plants, list of, 89.
 — yielding perfume, 53-76.
 Pogostemon (Patchouli), 70.
 Pomander, the, 31.
 Pot-pourri, recipes for, 46, 47, 48,
 49.
 Primrose, 70.

ROCKET, 63.
 Rockets, Sweet, 71.
 Rondoletia, 71.
 Rosaceous odours, 71.
 Rosemary, 71.
 Roses, 71.
 Rum, Bay, 70.

SAGE, 71.
 — Pine-apple scented, 71.
 Salvia (Sage), 71.
 Sanitas, 71.
 Santel (Sandalwood), 72.
 Santolina (Cotton Lavender), 72.
 Saraca (Jonesia), 72.
 Sassafras, 72.
 Savory, 72.
 Savours, sweet, 5.
 Scent Farms, 14.
 — Gardens of Liguria, 14.
 Scent: odour or perfume, 14.
 Scilla (Bluebell), 72.
 Senses, the five, 1, 7, 24, 25.
 Senses, interconnection of, 24.
 Sight, or seeing, 9.
 Smell, or sense of odour, 8.
 Smell of the town, 22.
 Sops in Wine, 60.
 Souchet (Cyperus), 72.
 Spice Bush, 64.
 — Islands of Europe, 43.
 Spikenard (Nardostachys), 72.
 — Ploughman's, 72.
 Spiræa (Meadow Sweet), 72.
 Star anise, 72.
 Stephanotis, 72.
 Stinks and smells, 24.
 Stock, Night-scented, 67.
 Stocks, 73.
 Storax, 73.
 Sumbul, 61.
 Sunshine and health, 51.
 Sweet Bay (Laurus), 73.
 — Fern bush, 60.
 — Flag (Acorus), 54, 73.
 — foliage or herbs, value of, 13.
 — Gale, 66.
 — Jar, recipe for, 49.
 — Pea, 64.
 — Rocket, 63, 71.
 — Scented flowers, 4.
 — Tussilage, 73.
 — Vernal Grass, 55.
 Syringa (Lilac), 73.

TANSY (Tanacetum), 73.
 Taste, or touch and odour, 8.
 Tea, to make scientifically, 36.
 — the art of tasting, 36.
 Thyme, 73.
 Thymol, 73.
 Toddalia, 73.
 Tonquin Bean, 73.
 Touch, or feeling, 7.
 Tuberoze, 70.
 Tussilago, 73.

VALERIAN, 74.
 Vanilla, 74.
 Verbena, 74.
 —, Lemon-scented, 54.
 Vervain (Verbena), 74.
 Vetiver (Andropogon), 74.
 Vinaigrette, the, 31.

Viola, 63.
Violet odours, 74.
Violets, the best sweet, 75.
Vitis (Vines), 76.
Vocalists and perfumes, 29.

WALLFLOWER, 76.
Walnut, 64.
Water Lilies, 67.
Water Lily tree, 65.
Wax vegetable, 74.
Wedding Lilies, 69.

Winter Green, 76.
Winter Sweet (Chimonanthus), 76.
Wistaria, 76.
Woodruff, 55, 76.
Wormwood, 55.

YARROW, 54.
Ylang-Ylang (Cananga), 76.

ZEDOARIA, 76.
Zerumbet, 76.

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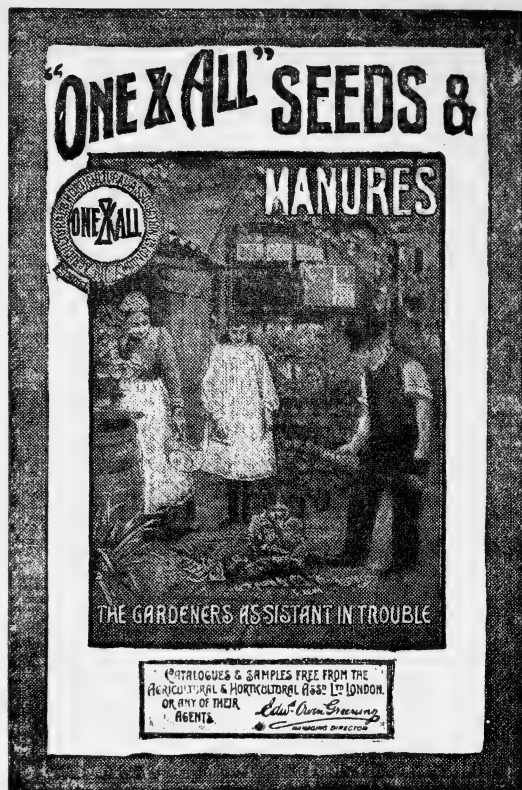
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